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Editorials

Some Surgical Emergencies*

WILLIAM SEAMAN BAINBRIDGE, M.D., C.M., LITT.D., F.I.C.S.
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ONE of the main purposes of the Guild meetings of our International College of Surgeons is to present briefly the essentials of surgical experience, report on the results of research and outline scientific approach to diagnosis through clinical observation with laboratory assistance. Thus the Guild system is a coördinating one, linking the clinical, research and the laboratory. This renders a real service in keeping surgeons in small communities —where there is but a modicum of surgical work—abreast of the times and conversant with new developments and advances. It conveys through the balanced judgment of those experienced as teachers and workers in the surgical field and through carefully selected articles in the "Journal" of our International College, problems that challenge the utmost ingenuity and ability of surgeons, and helps them to overcome, when possible, what may seem insurmountable handicaps. It seeks to teach, to inspire, and to aid each generation of young surgeons coming on, to take the place of those who are in the front rank today.

There are so many medical and surgical articles written, so many text books published, that it is impossible for the student, the medical man or the surgeon to masticate and digest them all, even in his own specialized field. These scientific books are like best sellers—after a few years they are too old to be read or discussed, for so many others have been published more recently. We now have year books and journals of abstracts—numerous medical and surgical "Readers' Digests," so that he who runs may read. The student who may not have sufficient time in preparation, must depend on hospital internship to develop the clinical on the basis of the theoretical. Later he must spend time in postgraduate work and refreshener courses. The methods and results of the past are often forgotten in the desire to adopt the new. While much that we have learned may well be forgotten, it must be remembered that a measurable amount of discoveries in medicine and surgery has been lost through the centuries until, as sometimes happens, we proclaim a great new advent to the waiting world, only to find that it has its basis in something quite old.

We are endeavoring to develop our vision and practical concepts toward a wider horizon. We are living through the greatest of all clinics—War—that has resulted in new developments and methods in many fields of medicine, surgery and sanitation, so that experience has been gained, unprecedented to date.

* Read at Meeting of Tennessee Division, U. S. Chapter, International College of Surgeons, Knoxville, June 8, 1945.

We are faced with many problems still to be solved. This clinic of war has of necessity forced men to think quickly in meeting unforeseen emergencies and to tax their resourcefulness to the utmost. They have proved that, without asepsis, without the best in instruments, without operating room, operating table, white uniformed nurses, but rather in the mud and dirt of the battlefield, under practically every adverse condition that can be met, the surgeon, forgetful of everything except the saving of life and limb and the amelioration of suffering, can work what are tritely called miracles and demonstrate that he is not softened by the "ultra" in modern medical centers. But there are those who have not had this experience; there will be more in the future. They must learn how better to meet emergencies in their surgical practice. Poise, quick, clear thinking, good judgment based on one's own experience and that of others, are necessary requisites to meet in full measure our call to service in response to the trust imposed upon us.

The literature that is coming forth in large volume in regard to emergencies in the present war is replete with lessons, many of which can be applied to the peacetime warfare which we will always largely have with us in the very process of living. In this paper, however, I am not including any of those which I have encountered in three wars (including the present one) but am limiting myself to some of the emergencies that may confront the surgeon in his daily work, wherever he may be.

1. A young surgeon was called by a dentist to see his wife who was having a severe vaginal hemorrhage. It was decided to curette the patient in her home. The dentist gave the anesthetic. His office nurse assisted. The patient went into collapse and died on the table. The Medical Examiner reported an anesthetic death. Because of certain local gossip, the body was disinterred some weeks later and an autopsy was performed. It was found that the uterus had been punctured and that the small intestine had been removed from the duodenal junction to the ileocecal orifice, there being a clean cut at each end without any ragged mesentery. The surgeon was indicted, tried, found guilty, sentenced to a ten year prison term. The courts sustained the conviction, and the Governor refused to act. The case was closed. The surgeon's fiancée sought my help. As I read the testimony in this tragic case, I could not grasp that what was claimed to have been done could have been accomplished without an open operation. As Professor of Operative Surgery and Gynecology at one of our large teaching hospitals, I had opportunity to try to duplicate the described operation on a number of female cadavers, but was unsuccessful. I discussed the matter with an outstanding surgeon of a neighboring state who at that time had as his patient the Chief Justice of the Court of Appeals that had turned down the case. We presented it before a meeting of a large surgical society. The record of that meeting was brought to the attention of the Chief Justice by his surgeon, and it resulted in the man's being pardoned. It was later learned that the patient had taken ergot to bring on a miscarriage and that the undertaker, a relative, had removed the small intestine when he embalmed the body.

2. One midnight a surgeon called upon me and stated that he had just curetted a patient who had been hemorrhaging from a miscarriage. He had emptied

the uterus and because the material obtained looked strange to him, had immediately brought it to me. I instantly saw that he had removed part of the small intestine by uterine puncture. I operated at once and found that several inches of small intestine were gone. There were two holes in the uterus, one through which the small intestine had been pulled, and a very small one which it was later discovered was caused by an umbrella wire used by the patient to induce miscarriage. The patient survived.

Note: In my instruction to postgraduate students in surgery on the cadaver, I always caution that a thawed-out uterus in a dead body is of much the same consistency as a septic uterus—soft and easily friable. Yet during the seven years when I was teaching in the "dead house," 28 per cent of the men, in curetting that organ, either left the uterus unclean or punctured it.

3. A young woman consulted a gastroenterologist. As a routine procedure he gave a test meal. When inserting the tube to remove the meal, he had difficulty, for there seemed to be a spasmodic stricture. Considerable force was exerted, there was sharp pain, and then the tube went down easily. The physician then started to wash out the stomach and discovered that the tube had gone down into the chest cavity. The patient went into collapse. I was called but was unable to save her.

Note: A great surgeon has said that the esophageal tube and the curette are two of the most dangerous instruments in the surgeon's armamentarium!

4. A patient was sent to me in the dispensary for the removal of what was diagnosed as a simple sebaceous cyst of the scalp. On examination I found what appeared to be a crater-like rim around the mass, which was about the size of a mandarin orange. This was situated over the anterior fontanel. I concluded that something more than a sebaceous cyst was present and had the patient hospitalized. It was discovered that she had an extra dural aberrant thyroid, that had worked its way through the skull. There would have been a fatality had the operation been performed, as scheduled, in the dispensary.

5. I was called to a Government hospital to see a woman who had been emotionally distracted since the death two weeks previously, of her husband, pathologist at the institution. A history was given me of a slow growing abdominal tumor. The neurologist at the hospital emphasized the neuropsychiatric condition; the medical man felt it was a gynecological case. The gynecologist stated that the abdominal tumor extended to the umbilicus, that the mass was more to the left than to the right, and that the uterus was retroflexed and attached to the rectum. I was called to operate and the patient was "prepared". I examined the patient in the presence of the three men who had attended her. On inquiry I learned that the woman had been passing frequently, a great deal of urine. Nevertheless I requested catheterization and waited for the result. One thousand c.c. of urine was evacuated! and the large "tumor" entirely disappeared! My next request was that the patient be given an enema. Nearly two large pus basins of fecal matter were removed. Again I examined the patient. The uterus was now in normal position; the "mass" in the intestine on the left side was gone. The patient made an excellent, nonoperative recovery.

Note: The emergency here was to keep the hospital records straight and yet protect the staff! I am reminded

that the greatest Book ever written says "all that is lawful is not expedient."

6. Another of several cases of this sort that I have had, was that of a woman I was called to see in one of our city hospitals, who was suffering from what was diagnosed as tonsilitis and a very large pelvic tumor. The patient was in marked abdominal distress. Before making a complete examination, I ordered catheterization, which netted 2,150 c.c. of urine: There was nothing present but a full bladder and, in fact, no tonsilitis.

Note: My rule, which I have found to be a safe one, is never to open the female abdomen without catheterization on the table, when the patient is under the anesthetic. Under the excitement of the impending operation and being given an anesthetic, hypersecretion of the kidney often results and the operator may be hampered in his surgical work in the lower abdomen and pelvic cavity by a quantity of urine in the bladder.

7. A patient decided to take her own rectal temperature. The thermometer disappeared. Later she complained of pain and told the nurse what she had done. X-ray examination showed that the thermometer had passed through a small rectal diverticulum. Operation was performed and the thermometer was removed from the cul de sac of Douglas.

8. On one occasion I was assisting Sir John Bland Sutton at the Middlesex Hospital in London. The amphitheater was full of spectators who had come to see the great surgeon at work. The patient was brought in. Sir John held up an X-ray film, and said "Gentlemen, on this film you will see seven kidney stones in the right kidney—please note, the Scriptural number of seven. We will explore." He opened the kidney, examined it thoroughly and found no stones; he sewed it up. He turned to the interested audience: "Gentlemen, you will recall that I said the stones were on the film! We will proceed to the next case."

9. In a brawl, a man was kicked in the abdomen and went into collapse. He had severe pain in the lower abdomen. There was no external evidence of the cause; a tube was inserted into the bowel and no blood was found. Catheter was inserted and it was found that there was no urine. Immediate laparatomy revealed a ruptured bladder and one and a half pints of urine in the abdominal cavity. Evidently the bladder had been full and the impact of the blow caused the rupture. The patient was saved.

10. A man who had fallen several stories, was brought to the hospital in an ambulance against his will. He did not seem to have any bruises, was only a little shocked, and after we had kept him for an hour or so he insisted on getting up and leaving. There was something about his looks—despite the fact that he said he felt all right—which made me suspicious that there might be internal injury. I had him sign a paper stating that he had left the hospital against our advice. Some hours later the Medical Examiner's office telephoned to inquire why we had permitted a dying man with a ruptured kidney to leave the hospital. He died of internal hemorrhage. Newspaper reporters were on hand ready for glaring headlines against the hospital and medical service of New York. The signed release saved the day!

11. A girl of seventeen was hospitalized for emergency operation for acute appendicitis. I was called to the hos-

pital about midnight and the operating room was in readiness. On examination, I found a large mass of fecal matter in the descending colon. The patient was due to menstruate and had certain premonitory signs. I decided against immediate operation and ordered enema, starvation diet, mustard foot bath and rest in bed. The blood count was not significant although somewhat above normal. She menstruated the following day and all signs of tenderness in the right side disappeared after the flow was well started. It is now nine years since this episode, she has married and has had no further "appendiceal" trouble.

Note: It is well to keep in mind that aberrant endometrium is sometimes found in the broad ligament, in the meso of the appendix, and at other sites. During impending menstruation, congestion in the tissue that has been misplaced, frequently gives symptoms simulating appendicitis. This possibility should always be considered, especially at puberty. It is also well to remember that there is a branch of the artery that comes from the ovarian, which connects with the blood supply of the appendix.

12. Early in my career, I had on my service at the New York City Children's Hospital on Randall's Island, a young boy eight years of age. He had tuberculous peritonitis of the fibrocystic type with some ulceration, and tuberculosis of the right testis. His general condition was exceedingly bad. It was impossible to open all the partitions in the abdomen to evacuate the fluid. Two partitions were opened, the patient went into collapse and, seeing an oxygen tank nearby, I suddenly thought that if oxygen is good for inhalation it might have an effect in the body cavity. I quickly introduced some of the oxygen into the two compartments and sewed up the abdomen leaving the two cavities inflated with the gas. Remarkable immediate improvement was noted which lasted for some hours but the disease was too far advanced and the child died after several days. The tonic effect of the oxygen certainly prolonged his life. This is the first case on record in which oxygen has been left in the abdomen to be absorbed.

13. Some years later, at Mr. Harold Chapple's clinic at Guy's Hospital, London, I removed a ten-pound tumor from a woman and inflated the abdomen with oxygen to the size of the removed mass, to demonstrate my use of the gas before a group of surgeons. A few minutes after the patient was returned to the ward just outside the operating room, the nurse in charge returned and in a frightened loud whisper said: "The patient has stopped breathing!" Fearful that something had gone amiss with the first case I had operated on for him at his clinic, Mr. Chapple asked me to see the patient immediately. The cheeks were red and the nails were pink but the nurse was right, there was no perceptible breathing. I gently tapped the patient on the chest. Her "Ow" was heard by the surgeons in the adjoinjng room. It was simply that she was in a state of physiological apnea. She had an uneventful convalescence; the gas having been gradually absorbed.

Note: For many years, I have had some remarkable results from inflating the abdominal cavity with warm oxygen and closing the abdomen with the gas *in situ,* in cases of tuberculous peritonitis, as a tonic support, and where large abdominal tumors are removed. In some cases of chronic cirrhosis of the liver with recurrent ascites, displacing

the fluid by oxygen acts as a tonic and lessens the rapidity of return. It also lessens shock by eliminating negative pressure. I have also used it in the chest cavity in selected cases of pleurisy with effusion. In certain centers abroad for the treatment of tuberculosis, my method of infusing pure oxygen into the chest cavity, utilized after Forlanini's method of artificial pneumothorax, has been found to give better results than had heretofore been obtained

In ancient days there were specialists for each organ and, in fact, for each side of the body. These specialists were not at all concerned with the parts of the body outside their special sphere. We have a tendency in that direction today. Some one has said that we do not need specialists but rather, broad minds sharpened to a point. It is of real importance for the surgeon to know something of everything and equally important that he know everything of something. The surgeon must have a knowledge of the fundamentals of medicine, of endocrinology, of neurology, of psychiatry, of the advent of new drugs and so forth, or he will find that his best surgical technic may be for naught in certain cases. He may call in as many specialists as there are days in the week, but in the end the responsibility is his. Through the years, the great endeavor has been to make surgery safe for the patient, but equally necessary is the task of making the patient safe for surgery, and the surgeon equipped to solve the problem.

From the *"Preamble"* to the *"Constitution of the International College of Surgeons."*

"This organization is founded to create a common bond among the surgeons of all nations and to promote the highest standards in surgery throughout the world without regard to nationality, creed or color, is dedicated to the principle stated by Pasteur: 'Science belongs to no country, because knowledge is the patrimony of humanity, the torch which enlightens the world.' "

Original Articles

Advances in the Operative Treatment of Cancer of the Large Bowel*

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ADVANCES in the operative treatment of carcinoma of the large intestine have resulted from better supportive measures used during the operative and postoperative periods; from new procedures to prevent or combat infection; and from changes in operative technic enabling a more radical removal of the malignant areas with minimal functional impairment. With the use of spinal anesthesia associated with blood transfusions and nutrient infusions, especially during and following radical resection of the large bowel, I have seen no case of shock or collapse sufficient to prevent the completion of a needed radical operation.

For spinal anesthesia, I prefer a mixture of 10 per cent procaine and 1 per cent pontocaine, but not exceeding 120 mg. procaine or 15 mg. pontocaine, injected through the second or third lumbar interspace. A cephalic elevation of the body of 10 degrees is maintained for ten minutes after the injection, after which a level or Trendelenburg inclination is used. From the larger dose an anesthesia lasting from three to over four hours is usual. The spinal anesthesia is given to a patient mildly narcotized and, if required, is supplemented by the very free (200 to 300 cc.) local use of 1 per cent procaine solution containing 1 minim of 1:1000 epinephrine to each 10 cc.

Infections from operations upon the large bowel have been greatly reduced by the use of antibiotics and technical measures to limit contamination. A few surgeons have acquired such confidence in the use of sulfonamides with penicillin, that they even consider it quite safe to do open resections and anastomoses of the large bowel without drainage. The patient is prepared by laxative followed by succinylsulfathiazole or similar drug by mouth. A large dose of penicillin (100,000 units or more by vein or otherwise) is given at the completion of the operation, followed by additional amounts intramuscularly at two or three hour intervals for six to eight days, and possibly additional sulfones, locally or parenterally. Streptomycin especially, which has a rather low toxicity and complements the action of penicillin by suppressing the activities of gram negative bacteria (against which penicillin is largely ineffective), may prove a more valuable adjunct than the sulfonamides. By the use of such combinations, certain operations that have been abandoned on account of septic complications, may be revived.

Personally I use succinylsufathiazole for the three preoperative days, but no sulfone in the wound or peritoneum. Penicillin is administered if there is definite evidence of infection.

* Read at Tenth National Assembly, U. S. Chapter, Washington, D. C., Dec. 6, 7, 8, 1945.

† From the Surgical Department of Temple University School of Medicine, Philadelphia.

From a technical standpoint, operative results have been improved by the greater use of aseptic methods of intestinal resection and anastomosis. Thus, for nearly three years, I have used only a one stage, aseptic resection with end to end anastomosis for all carcinomas of the large bowel above the midrectum. Especially convenient is the Furniss or other modification of the Donati clamp. The two ends of the bowel to be united are shirred in apposition on a single small pin, over which two rows of seroserous sutures are introduced. Of course, preliminary decompressive procedures are required when the bowel is obstructed, and also exteriorization may be desirable to terminate quickly an operation for advanced carcinoma in order to limit a septic contamination of the peritoneum. Otherwise, we no longer use the Paul-Mikulicz operation, which is notorious for secondary malignant implants in the abdominal wall and adjacent structures and also, in my experience, has a higher operative mortality (12 per cent) than the more radical single stage, end to end resection.

Westhues, Coller, Gilchrist, David and others have shown that the lymphatic spread of cancer of the rectum and sigmoid is lateral and cephalad, and that rarely does it extend 3 cm. or more below the growth. Thus, usually it is possible to save the terminal rectum and a functional anus, as 97 per cent of cancers of the large bowel do not involve these parts. Corroborating the pathological studies, in 204 proctosigmoidectomies in which the proximal end of the sigmoid has been pulled through the pelvic floor for a perineal opening or functional anus, while in some cases carcinoma has recurred in the vaginal wall, prostate or pelvis, on the level or above the level of the original growth, I have observed no tendency for carcinoma to be implanted below the level of the primary growth.

Quite different is cancer of the anus, which may recur locally in the perineum and pelvic floor as well as in the medial inguinal lymph nodes. Thus, unless the cancer involves the anus or closely adjacent rectum, it is unnecessary to remove the anus and surrounding pelvic floor, as is done in the Miles operation. Unfortunately, thousands of patients have had this unnecessarily mutilative operation. The older operations, in which a perineal colostomy was formed through a dorsal or perineal approach, had serious objections, including inadequate removal of bowel and lymphatic-bearing mesentery. The position of the new opening against the resected sacrum, as in the Kraske operation, was unsatisfactory and the blood supply to the mobilized bowel was often inadequate, so that the end of the bowel sloughed back into the pelvis. The earlier perineal or dorsal operations devised to retain a functional anus also gave poor results. Despite the removal of the coccyx and sections of the sacrum, the operations were insufficiently radical and were followed by serious complications. The end to end anastomoses by the dorsal route very frequently broke down, with the formation of distressing and dangerous wound infections and fistulas. Pull-through operations, as that of Hochenegg, in which the lower segment of bowel was first inverted through the anus, denuded of mucosa and then replaced to form an outer sheath for the upper segment, which then was brought through and sutured about the anus; or operations in which the upper segment of bowel was brought through the denuded anus, as in the Whitehead procedure, also led to complications. These operations, or other

operations in which the oral end of the resected bowel is sutured to the skin, are not advised.

All patients with cancer of the large bowel, with or without metastasis, who are not in the terminal stage, I have, for a number of years, treated by radical removal of the cancerous bowel. Of the last 300 patients admitted for carcinoma of the bowel, 97 per cent have had radical resections. About 20 per cent of these had hepatic metastasis. About 13 per cent had malignant invasion of the small bowel, bladder, ureters, uterus, stomach, abdominal wall or other part. A permanent palliative colostomy was not used. The 3 per cent whose life expectancy was but a few weeks or months were given narcotics or the Dogliotti intradural injection of alcohol to relieve pain, and returned to their homes. Patients not in the terminal stage, but with metastases, usually improve greatly after the necrotic, bleeding and perhaps obstructive primary growth is removed, and often live in relative comfort from one to three or more years. One patient with metastatic nodules in the liver has lived nearly eight years. One with gelatinoid carcinoma of the pelvic floor lived eighteen years after his primary operation.

For *cancer of the colon* from the cecum to 11 cm. above the anus, a single stage, wide resection with end to end anastomosis, using a modified Furniss clamp, is now employed. An inner seroserous continuous row of fine (00) catgut and an outer row of fine (37) stainless steel wire interrupted sutures, tied in a square knot, are used. Continuous suction drainage of the peritoneal cavity with double perforated tube drain (sump drain) of stainless steel or the rubber aspiration drain of Chaffin is continued until peritoneal exudate ceases (two to four days). With left colon resections, a complemental temporary appendicostomy or cecostomy, made through a small stab wound, with a 16 F. catheter is used for the first week or ten days. For right colon resections, the bowel contents being liquid, ileostomy is considered unnecessary.

For *cancer of the rectum* between 4 and 11 cm. above the anus, the bowel is liberated through an oblique, left inguinal, muscle-splitting incision 3 cm. above and parallel with the left inguinal ligament. The incision is carried through the lateral edge of the rectus sheath, the inferior epigastric vessels divided and ligated, and the abdomen explored from the liver to the pelvis. The small intestines are walled off from the pelvis and lower abdomen by moist saline pads. The sigmoid is retracted to the right and its left lateral leaflet divided about 3 cm. from the bowel, exposing the left ovarian or spermatic veins, which are divided and ligated. Deep to these vessels and attached to the peritoneum, the left ureter, recognized by its surrounding plexus of fine vessels and its trombone-like peristaltic movement on irritation, is located and gently separated from the overlying peritoneum to the depths of the pelvis The hand is then introduced under the peritoneum, the sigmoid and the broad right peritoneal leaflet, are elevated from underlying structures and the peritoneum divided parallel with and about 2 cm. medial to the right ureter, usually easily recognized through the overlying peritoneum. More medial and attached to the elevated peritoneum, is the cord of blood vessels and adjacent lymphatics, the inferior mesenteric above and the superior hemorrhoidal vessels below. With the finger under the elevated peritoneum, the chain of lymph nodes accompanying the vessels

is palpated, and the vascular bundle clamped, divided and doubly ligated, if possible, above any enlarged nodes, and usually with the first and second sigmoid branch. This is higher than in the Miles operation, and often on a level with the third or fourth lumbar vertebra. The peritoneal divisions lateral to the bowel are united in the pelvis across the reflection between the uterus and rectum, or, in the male, the bladder and rectum. The hand is now introduced between the rectum and sacrum, and the bowel freed posteriorly. With long scissors the lower rectal stalks containing the middle hemorrhoidal vessels are divided on each side, these vessels rarely requiring ligation. Anteriorly the rectum is separated from the seminal vesicles and prostate, or, in the female, from the upper vagina. With a warm pad temporarily on the pelvis, the mesosigmoid is carefully divided from its point of ligation to the sigmoid, and parallel with and usually between the first and second sigmoid arteries. By a high ligation and division of vessels, not only are the tributary lymphatics more widely resected, but the curve of the sigmoid can be straightened better without damage to the vascular arcades, so that there is sufficient viable bowel to reach through the perineum. Adjacent to the line of division of the mesosigmoid, the vascularity of the bowel is carefully tested by dividing the vessels on the surface of the sigmoid until a line of free arterial bleeding is found. Above this there should be at least 12 cm. of sigmoid, so freed as to extend below the promontory of the sacrum. If necessary, more of the lateral peritoneal leaflet of the descending colon is divided and this portion of the colon displaced to a lower position.

A tape of folded soft gauze 4 cm. wide and 100 cm. long is now tied about the sigmoid at its zone of denudation and the ends packed against the floor of the pelvis, the liberated rectosigmoid placed upon it, and the omentum, if free, pulled over the small intestine. Should the gallbladder contain stones, a transverse incision 3 or 4 cm. long is made over it, and, guided by the underlying hand in the abdomen, the dome of the gallbladder is grasped by forceps and pulled through the incision. The pelvis is not peritonealized.

A sump drain 8 to 10 mm. thick is introduced to the floor of the pelvis through the lower incision or an adjacent stab wound, and connected with a suction apparatus. The wound is closed with two deep rows of interrupted 30 gage stainless steel wire and the skin and superficial fascia with interrupted 35 and continuous 38 wire. The mobilized gallbladder is then opened, the stones removed and a drainage tube tied in.

The patient having been placed in the lithotomy position, the rectum is cleansed and thoroughly packed with gauze wet with 3.5 per cent tincture of iodine. Surrounding structures are carefully asepticized and a midline posterior incision made through the posterior border of the anus, underlying sphincters and pelvic floor to the right side of the coccyx. A finger is introduced in the midline between the halves of the levator anii, which are elevated by the finger and divided just lateral to the finger, while the rectum is divided step by step, beginning posteriorly just above the sphincters, and the upper edges grasped by hemostat after hemostat until the entire circumference of the rectum has been divided. A slight additional separation from the urethra and prostate, or posterior vaginal wall, and the rectum is liberated and withdrawn, with the lower sigmoid, through the split anus, with the attached tape. The pelvis

is wiped dry, and the levators anii and other divided structures united *loosely* about the sigmoid by interrupted layer sutures of 32 alloy steel wire for the deep layers and interrupted sutures of 35 wire for the skin. Unless the finger can be introduced easily between the bowel and united structures, the bowel may be strangulated by the later swelling.

By measurement, the pelvic floor built up about the withdrawn sigmoid, should be about 7 cm. in depth. No sutures are introduced between the bowel and surrounding structures or skin, and to avoid infection no catgut but only stainless steel sutures and ligatures should be used in this wound with this technic. Thus far there has been no destructive infection or fistula in the perineal wound—and with the retained anal canal and the deep muscular encasement of the withdrawn sigmoid the danger of the transplanted bowel sloughing back into the pelvis is much reduced.

Dressings are applied around the withdrawn bowel, the rectosigmoid cut away about 10 cm. beyond the perineum and a 26 or 28 F. rubber rectal tube introduced and tied in the bowel. Thus the wound is not contaminated by early fecal discharges. About the sixth postoperative day, the protruding bowel under and beyond the ligature sloughs off, permitting the rectal tube to slip out. Between the seventh and tenth days, the perineal wound having healed, the protruding bowel is removed, without anesthetic, by wire tonsil snare or clamp and cautery about 1 cm. below the anus. The protruding sigmoid then retracts so that later the narrow cicatricial junction between the anus and sigmoid lies just above the sphincters. The sump drain is to be removed between the second and fourth day or whenever the free drainage of blood and serum has ceased. The patient usually is discharged about the fourteenth day, with directions to take a light saline laxative every second to fifth day and to use a low residue diet.

A month later the external anus closely resembles the normal. Voluntary contraction of the sphincters and levators are produced at will. Most patients sense a warning of approaching defecation. Should there be any tendency to contraction at the line of anastomosis, test tubes are supplied, to be lubricated and inserted daily until an adequate-sized opening has been established. If the opening through the anastomosis is too small, incomplete evacuations with frequent soiling will occur.

The anus having been healed for six weeks, enemas every second to sixth day may safely be substituted for laxatives by mouth. Most of the patients after this operation can go without a protective pad except during an attack of watery diarrhea or immediately after the use of an enema. Impotence is not as common as after the Miles operation.

Abdominoperineal Proctosigmoidectomy, with *removal of the anus,* and *perineal colostomy.* For carcinoma of the anus, or rectum within 4 cm. of the anus, excision of the anus, pelvic floor and lower rectum is indicated. The abdominal phase of the operation may be carried out as previously described. For the perineal part, the lower rectum is packed with gauze wet with 3.5 per cent tincture of iodine, and the anus closed by a strong purse-string suture. An elliptical incision is made about the anus through the skin and pelvic floor wide of the malignant invasion, completing the liberation of the rectosigmoid, which is withdrawn. As the deep perineal muscles have largely been removed, there is insufficient pelvic tissue

left to form a supporting pelvic floor. If the skin is united around the withdrawn bowel, even though a pelvic diaphragm of peritoneum also is formed, the thin skin and peritoneum occasionally will stretch during the ensuing months, as after the Miles operation, forming a perineal hernia containing largely coils of small intestine. This may be prevented in large measure by forming a deep, narrow cleft between the buttocks, in the depths of which lies the sigmoidostomy opening. To accomplish this, the skin and subcutaneous fascia from the medial sides of the buttocks are dissected from the underlying gluteus maximus, and the thick skin and fatty edges on each side sutured to the tough, fibrous tissue over the medial sides of the ischium, ramii of the pubis and coccyx, with interrupted sutures of 30 and 32 stainless steel wire, the ends being left long to facilitate later removal. Dressings are applied and the protruding sigmoid cut away, leaving a sufficiently long portion of sigmoid to protrude beyond the buttocks, into which a rectal tube is tied to divert fecal discharges from the wound.

At the end of eight or ten days the protruding bowel is amputated by a heavy tonsil snare, without anesthesia, leaving about 1 cm. protruding beyond the skin.

A similar operation may be used to transplant the abdominal colostomy and to correct a perineal hernia developing after a Miles or other operation which resects the pelvic floor.

A second method I have used is to tunnel under the skin and fat of the buttock and form a colostomy opening through the mobilized skin of the buttock, a procedure which may be used to prevent the prolapse of bowel through the new opening.

Some surgeons, while professing complete satisfaction and esteem for abdominal colostomy and while showing no contrition or remorse for their needless destruction of many healthy sphincters anii, anathematize a perineal colostomy. Evidently they have never taken pains to make the perineal colostomy better than that of Kraske or to give patients with the perineal opening the postoperative lessons in management they have found necessary for the abdominal opening.

For comfort and cleanliness, the perineal opening should be large and unobstructed so that the entire colon may be emptied rapidly and completely by a quickly acting saline laxative (usually taken on arising) or an enema. Usually this is followed by an interval which may last several days before the colon again fills to the point of overflowing, when the laxative should be repeated. There is a small percentage of patients —about 5 per cent—who, with a perineal colostomy, sense impending defecation and are able to go about without pad or other protection or the need of emptying the colon at regular intervals by enema or quickly acting laxative. In the series of operations in which I have transplanted a colostomy left after a Miles or other operation, the patients have reported that the perineal opening is more manageable and convenient, the need of attention less frequent, and the escape of offensive gas on bending over or other movement less marked than with the abdominal opening.

The abdominal part of the abdominoperineal operation differs in a number of ways from the Miles operation. The muscle-splitting, oblique incision in the lower left abdominal quadrant, in the line of skin cleavage, affords good access, better enables the uninvolved in-

Table I

Total Operations for Cancer of the Large Bowel without Permanent Abdominal Colostomy	559
Abdominoperineal proctosigmoidectomy	204
Perineal proctosigmoidectomies with perineal colostomy	65
Radical resections with end to end anastomosis	152
Paul-Mikulicz stage resections	82
Miscellaneous operations	56
Radical Operability, total	89%
Radical Operability (last 300 patients)	97%
Percentage having radical operation, with metastasis to liver, about	20%

Table II

OPERABILITY, TYPE OF OPERATION AND MORTALITY IN 100 CONSECUTIVE RECENT PATIENTS

	No. Patients	Hospital Deaths
Too far advanced for radical or palliative operation	2	1
Total patients having radical resections	98	4
1. One stage abdominoperineal proctosigmoidectomy without abdominal colostomy	44	2
2. One stage resection with primary end to end anastomosis	51	2
3. Perineal proctosigmoidectomy	3	0

Of the 98 patients having radical resection, 18 had metastasis to liver; 13 had an associated resection of bladder (3), vagina (3), ureter (2), stomach (1), or a hysterectomy (4).

The end to end resections included 16 of the rectum, 23 of the sigmoid or descending colon, 13 of right colon to splenic flexure. One of the 2 deaths was due to coronary occlusion five hours after operation, in a man of 70. The second occurred in a woman with extensive metastasis to the liver, from leakage from an anastomosis close to the pelvic floor.

Of the 2 deaths from abdominoperineal pull-through operations, one occurred in a man of 70 eleven days after resection of one-half of bladder, 15 cm. of ureter, and the rectosigmoid, for ineradicable disease. In the second, a woman of 60, obstructed for five days, during proctosigmoidectomy and panhysterectomy the sigmoid clamp slipped off, flooding the abdomen and pelvis.

testine to be retained out of the operative field by gauze pads, and rarely leads to a postoperative hernia. Instead of ligating the mesosigmoid at the level of the sacral promontory, the inferior mesenteric and first sigmoid are ligated on the level of the fourth or third lumbar vertebra, thus more widely removing mesosigmoid lymphatics as well as enabling the curve of the sigmoid to be straightened with less interference with the circulation in the vascular loops. The mesosigmoid is divided wide of the bowel, and as no pelvic diaphragm is formed, the tendency to conserve peritoneum for this purpose need not be considered. The dangers from denuding the pelvis of peritoneum have been much over-rated, and those who form a pelvic diaphragm apparently fail to realize that catgut used for sutures is as capable of producing dense intestinal adhesions as a surface denuded of peritoneum. In the last 100 consecutive

abdominoperineal resections without peritonealization of the pelvis, there have been no instances of ileus from pelvic adhesions requiring operation.

The operation also differs from the telescopic operations of Hochenegg and similar dorsal procedures, in that the rectosigmoid is not liberated, resected or sutured through a dorsosacral incision or the perineum. No suture anastomosis or attachment of the bowel to the skin is made. The anal mucosa is not removed or detached from the sphincters. The anus is not divulsed, but the sphincters are divided posteriorly, preventing constriction and necrosis of the contained bowel. The dorsal incision is closed in layers with the deep pelvic muscles forming a very thick pelvic floor, and as it is not drained through the perineum this source of delayed healing and infection is excluded. A section of sigmoid is left protruding through the dressing, with a tied-in rectal tube preventing fecal contamination of the wound during the healing period. The bowel is not entered during the abdominal phase of the operation and the cancerous portion is cut away only after all wounds are closed and dressings have been applied. The rectosigmoid is liberated through an abdominal incision, enabling tested vascular sigmoid to be brought through the anus. Infection from the mucous lining of the bowel is prevented by packing with gauze impregnated with tincture of iodine, one of the few antiseptics that harden the mucous membranes and arrest mucous secretion.

SUMMARY

Technics without permanent colostomy, used by the author in the radical operative treatment of over 550 early or advanced cancers of the large bowel, upon patients from 24 to 87 years of age, are described. By substituting radical resection for palliative colostomy, the rate of operability has increased to 97 per cent, and patients with ineradicable malignant extensions have had a more prolonged and comfortable existence than would have been possible from a colostomy. The 3 per cent refused operation represent patients in the terminal stage, best treated by nerve blocking, sedatives and a selected, low residue diet. Radium or x-ray rarely are used. About 20 per cent of patients treated by radical operation, have had early or advanced metastatic carcinoma in the liver, and about 13 per cent have had extension to the uterus, bladder, ureters, prostate, small intestine, stomach or other part. After removal of the primary growth, many patients with residual irremovable metastases have lived for two or more years without special treatment.

The infrequency of anal carcinoma and the tendency of rectal carcinoma to spread laterally and upward rather than downward has enabled the preservation of functional sphincters in most rectal carcinomas. The author's pull-through operation for lower rectal carcinoma, with reconstruction of the pelvic floor and retention of mucous membrane-covered functional sphincters has given a restoration approaching the normal. Wide resection with aseptic, end to end anastomosis is used for nearly all carcinomas of the large bowel situated above the midrectum, with a lower mortality and morbidity than from the Paul-Mikulicz or other stage operations. Transplantation of carcinoma to the anus and pelvic floor from the pull-through operation has not been observed.

From over 40 patients who have had an abdominal colostomy, left from a Miles or other operation, closed or transplanted to the perineum, it is evi-

dent that a properly formed perineal colostomy is preferable to the abdominal opening.

RÉSUMÉ

La technique sans colostomie permanente fut employée par l'auteur dans 550 cas est décrite. Il substitue la résection radicale à la colostomie palliative, et aussi l'opérabilité est augmentée de 97%; une existence prolongée et confortable est obtenue dans les cas où les extensions sont inéradicables. Le traitement par le radium et par les rayons X est rarement employé. Le carcinome anal étant d'une rare fréquencie, et la tendance du carcinôme rectal de s'étendre lateralement permettent dans la majorité des cas où préserver la fonction perinèale est préférable à l'ouverture, abdominale cela est confirmé par l'expérience de vingt malades qui furent soumis aux deus opérations.

RESUMEN

Se describen aquí los metodos operatorios sin colostomía permanente empleados por el autor en más de 550 casos de cáncer del intestino grueso, tanto en la fase precoz como en la avanzada. Mediante la sustitución de la resección radical por una colostomía paliativa se ha aumentado la cifra media de operabilidad a un 97%; obteniéndose una existencia prolongada y confortable para aquellos con extensas lasiones de imposible eliminación. Rara vez se emplea la terapéutica con radio o con rayos-X.

La poca frecuencia de carcinomas del canal anal y la tendencia de los carcinomas rectales a extenderse lateralmente o hacia arriba, ha permitido la conservación de esfínteres funcionales en la mayoría de los casos. De las experiencias con más de 20 pacientes a los que se hizo primero una colostomía y luego se transplantó al perineo, se deduce que es preferible una colostomía perineal bien formada a la apertura abdominal.

Свод

Описана операция автора без перманентной колостомии, примененная в 550 случаях старого рака большой кишки. Применение радикальной резекции вместо паллиативной колостомии увеличило оперативность до 97% и дало удлинение жизни, больший комфорт больным с неудалимым распространением рака. Рентгенотерапия была употреблена редко. Редкость рака anus'a и наклонность прямокишечного рака распространяться латерально и вверх дает возможность сохранить в большинстве случаев функциональный сфинктер. Наблюдения над двадцатью больными, над которыми была сделана сначала абдоминальная колостомия, а затем пересадка в промежность, доказывают, что правильно сформированная перинеальная колостомия лучше, чем брюшное отверстие.

MASS RADIOGRAPHY *

ITS EVALUATION AS A CONTRIBUTION TO PREVENTIVE MEDICINE, PARTICULARLY AS REGARDS TUBERCULOSIS

JAMES F. BRAILSFORD, M.D., PH.D., F.R.C.P., F.I.C.S.

The incidence of tuberculosis is steadily declining with the steady improvement in the conditions of life. The provision of better housing, living and working conditions, health education and improved medical practise will materially contribute to its eradication. The medical practitioner should be given every facility to have his patients investigated by competent authorities including those in skin reactions, sputum examina-

* Being a summary of a paper given at a Joint Clinical Conference of the British Medical Students' Association, July 10, 1945.

(Continued on page 242)

Surgery of the Stomach and Duodenum at a Naval Hospital

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DURING six months in which the average daily patient census ranged from 1,500 to 2,000 in this Navy hospital, there were 91 admission for lesions of the stomach or duodenum. All but two (89) were peptic ulcers. Seventy-one of these were duodenal ulcers and eighteen gastric ulcers. Twelve patients (13 per cent) came to surgery.

Ten patients were operated for duodenal ulcer. The indications for operation were, in the order of frequency, repeated massive hemorrhage (4), obstruction (3) and intractability (1). In none of the cases was there perforation of the duodenum. Two cases had persistent symptoms and roentgenographic findings of duodenal ulcer with high-lying, improperly made, gastroenterostomies. One patient at surgery was found to have a gastric ulcer, together with an obstructing duodenal ulcer. Two cases of marginal ulcer with persistent duodenal ulcers are included as duodenal ulcers. One patient (Case 3) had had a gastroileostomy performed elsewhere, inadvertently.

Two cases underwent operative procedures for reasons other than duodenal ulcer. In one, a duodenal diverticulum was resected, and in the other a perforated marginal ulcer was closed. These two cases seem of sufficient interest to warrant detailed description.

Case 1: A 33 year old fireman was admitted to the hospital May 25, 1945, with a diagnosis of duodenal ulcer for medical observation. He complained of epigastric pain after eating. A roentgenogram showed a small diverticulum of the duodenum (fig. 1). Because a diverticulum of this size is believed rarely to produce symptoms, medical treatment was instituted and the patient kept under close observation. The symptoms were not relieved. At the patient's request, surgical exploration was made July 11. The duodenum was opened longitudinally and a diverticulum about two centimeters deep was found adjacent to the accessory pancreatic duct. The diverticulum was inverted and excised. The incision in the duodenum was closed transversly. Pathologic examination revealed ulceration of the base of the diverticulum, with polymorphonuclear and round cell infiltration. Convalescence was uneventful. The symptoms referable to the diverticulum were relieved completely and have not recurred.

Case 2: A 25 year old aviation machinist mate was admitted to the hospital, June 27, 1945, with acute abdominal pain. Fourteen months earlier a gastroenterostomy had been done for duodenal ulcer in another naval hospital. At the time of admission, examination revealed a markedly undernourished individual with generalized abdominal tenderness on rebound and pressure. There was some rigidity. The symptoms were most severe in the left, upper quadrant of the abdomen and in the left flank. The white

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blood cell count was 10,450, of which 72 per cent were polymorphonuclears. A roentegnogram revealed air in the abdomen along the left flank. The psoas shadow on the left side could not be seen. The diagnosis was "perforated gastrojejunal ulcer."

The perforation was closed surgically. A viable flap of omentum was secured over the suture line and the abdomen closed, with drainage. Convalescence was uneventful.

About one month later the patient developed cramping pain radiating from the epigastrium downward to the left of the umbilicus. Because of the possibility of a second gastrojejunal perforation, definitive surgery was made on August 31. A perforated gastrojejunal ulcer was found, walled off and adherent to the parietal peritoneum. The gastroenterostomy was taken down and an anterior Polya-type gastric resection was made. Somewhat over one-half of the stomach was removed. At operation the patient was found to have undergone previously a combination of three ill-advised surgical procedures, namely, (1) anterior gastroenterostomy, (2) high gastroenterostomy and (3) gastroileostomy instead of gastrojejunostomy (fig. 2). The postoperative course was uncomplicated and the patient was returned to duty.

DISCUSSION

The most common lesion of this group for which surgery was performed, was duodenal ulcer. The most frequent indication was hemorrhage. Patients were not operated upon during active bleeding episodes and surgery was elected only in cases of repeated, massive hemorrhage.

Obstruction ranked second as the causative factor requiring surgery. In one case (Case 11), the patient's stomach had become huge from dilation produced by almost complete obstruction, although he was only 19 years old.

The patient (Case 9) with duodenal and gastric ulcers, admitted symptoms dating back 16 years. Marked symptoms of obstruction developed about three months before admission. The gastric ulcer was on the lesser curvature of the stomach, near the pylorus, and was not suspected before surgery.

In only one case was resection performed because of intractability after the patient had received a thorough trial of medical treatment without improvement.

Fig. 1. Duodenal Diverticulum *(Case 1.)*

It is possible that in the surgical treatment of duodenal ulcer, the pendulum has swung too far toward gastric resection. Experience has shown that gastroenterostomy is an excellent procedure if done *only* when indicated. At present the authors perform gastroenterostomy only when the patient shows signs of obstruction, has low gastric acids and is over 45 years of age. Since none of the patients whose cases are reported in this paper met these criteria, gastric resections were done in all cases. The mortality was *nil* and none has been discharged from the service.

With one exception (Case 5), these

patients were ambulatory on the seventh or eighth postoperative day. Case 5 received a blood transfusion, because of anemia only, on the fifth postoperative day. While receiving the blood, he developed a severe chill and a temperature of 108.2° F. This was followed by hemolytic jaundice. He is up and the jaundice is subsiding one month after its onset. In six cases (Cases 5 through 10), stomach intubation was not required at any time following anterior Polya resections. In two cases, posterior Polya resections were made, following which continuous tube suction was required for two and three days, respectively, after operation.

Fig. 2. High gastroileostomy with complete obstruction of the duodenum from old duodenal ulcer. *(Case 2.)*

In the two cases in which the gastroenterostomy was taken down and gastric resection was made, continuous suction was used as a routine measure for three days postoperatively. In one of these the posterior Polya procedure was employed.

The two patients on whom gastroenterostomies had been improperly performed elsewhere constitute, in themselves, a plea. Excepting emergencies, cases requiring gastric or duodenal surgery should be transferred to hospitals where there are surgeons properly qualified in this field. In both of these cases, the anastomosis was made so high that the stomach could not empty adequately (figs. 2 and 3). In one, the ileum instead of the jejunum was connected to the stomach (fig. 2).

The case of duodenal diverticulum is of interest because duodenal diverticula seldom cause symptoms. However, when they do, the essential symptom is usually pain after eating, probably owing to retention of food in the diverticulum. Nearly all true duodenal diverticula are located in the region of the openings of the bile and pancreatic ducts. The case reported was found by gross and histopathologic examination to be a diverticulitis and was adjacent to the accessory duct.

PRINCIPALS OF SURGICAL TREATMENT

Surgical treatment of cases of duodenal ulcer has been simplified as much as seems consistent with optimum results. The general routine established has not precluded deviations when indicated in individual cases.

Preoperative care. The patient who does not have an obstruction, is not anemic and has been receiving a reasonably well-balanced diet requires no special preoperative care.

In cases of obstruction, preparation for surgery includes gastric lavage twice daily until the amount of stomach contents aspirated each morning before eating is negligible. Feedings consist of a low-residue, high-carbohydrate, high-protein diet supplemented with ascorbic acid and thiamine. Five per cent glucose in normal saline solution

is administered intravenously if the obstruction prevents the patient from taking sufficient nourishment by mouth. The stomach contents are thoroughly aspirated before surgery.

Patients whose losses of blood have produced anemia before surgery are given sufficient blood by transfusion to correct the anemia.

Operative technic. In contradistinction to surgery of the colon, in which preoperative preparation is probably the most important single factor, minimal mortality in gastric surgery is largely dependent upon properly executed surgical technic. One important factor is the treatment of the duodenal stump. In our experience, it has seemed unnecessary to resect the ulcer itself. We no longer attempt this. Neither do we leave any of the pyloric portion of the stomach. Routinely, we now divide the duodenum just distal to the pyloric vein. A running, fine chromic, intestinal suture is made over a small Payrs clamp. When the Payrs clamp is removed, the suture is secured. Frequently there is not available any seromuscular tissue on the posterior wall of the duodenum to suture, unless the duodenum is dissected from the head of the pancreas. In such instances the capsule of the pancreas is utilized in lieu of the posterior wall of the duodenum and is sutured to the seromuscular layer of the interior wall of the duodenum. The suture line is covered with a piece of omentum whenever possible. With this technic, a second-stage operation removing the pylorus is unnecessary. When a Devine type of procedure is used in such cases, reoperation to remove the pylorus is usually necessary.

Gastrojejunal anastomosis is made with two rows of running, fine chromic, intestinal sutures. The angles only are reinforced with interrupted sutures. A third suture line is unnecessary. The suture material used should be limited to the amount which affords adequate approximation with minimum strangulation of tissue. Leakage has not occurred in cases operated upon by one of the authors (Stevens) since the foregoing procedures have been used in treatment of the duodenal stump and the gastrojejunal anastomosis.

The technic obviously is time-saving. In cases in which only gastric resection

Fig. 3. Result after gastroileostomy was taken down and gastric resection was made. (Same case as Fig. 2.)

was employed, the total operating time varied from 55 minutes (Case 10) to 120 minutes (Case 12), averaging 84 minutes.

All cases are not suitable for the anterior type of anastomosis, nor is it necessary to make posterior anastomoses in all cases. The conditions in the individual case must determine the procedure to be followed. In the patient with a high-lying stomach, a short mesocolon and a relatively small greater

TABLE I

Case	Sex	Age	Diagnosis	Indication for Surgery	Operation	Operation Time	Free HCl		Dilation Proximal Loop	Result
							Pre. Op.	Post. Op.		
1	Male	33	Duodenal Diverticulum	Pain	Resection of Diverticulum	One Hour	...	...	...	Good
2	Male	25	Gastro-ileal Ulcer	Perforation	Closure Perforation	One Hour Five Min.	...	...	...	Good
3	Male	25	Duodenal Ulcer-High Gastro-ileostomy	Malfunction	Take Down G.E.-Ant. Polya Gastric Resection	Two Hours 30 Min.	45	0	No	Good
4	Female	34	Duodenal Ulcer-High Gastro-jejunostomy	Malfunction	Take Down G.E. Post. Polya Gastric Resection	Two Hours 25 Min.	38	0	No	Good
5	Male	29	Duodenal Ulcer	Hemorrhage	Ant. Polya Gastric Resection	One Hour	60	...	...	Trans. Jaundice
6	Male	52	Duodenal Ulcer	Hemorrhage	Ant. Polya Gastric Resection	One Hour 40 Min.	68	0	No	Good
7	Male	21	Duodenal Ulcer	Hemorrhage	Ant. Polya Gastric Resection	One Hour 25 Min.	53	0	No	Good
8	Male	29	Duodenal Ulcer	Hemorrhage	Ant. Polya Gastric Resection	One Hour 40 Min.	36	0	No	Good
9	Male	36	Duodenal Ulcer Gastric Ulcer	Obstruction	Ant. Polya Gastric Resection	One Hour Two Min.	14	6	No	Good
10	Female	27	Duodenal Ulcer	Obstruction	Ant. Polya Gastric Resection	55 Min.	32	8	No	Good
11	Male	19	Duodenal Ulcer	Obstruction	Post. Polya Gastric Resection	One Hour 30 Min.	32	12	No	Good
12	Male	29	Duodenal	Intractability	Post. Polya Gastric Resection	Two Hours	60	0	No	Good

omentum, the anterior Polya procedure is the authors' choice. Otherwise, and if the pepunal mesentery is so short that it causes undue tension on the jejunal loop, the posterior Polya procedure is selected. Following these criteria, seven anterior Polya and three posterior Polya resections were made.

Until a few years ago, the authors routinely made the so-called isoperistalic type of anastomosis in both the anterior and posterior Polya operations. During that time, postoperative dilation of the proximal jejunal loop was recognized in certain cases. Consequently, the method used at the Lahey Clinic has been adopted. This consists of a so-called antiperistalic type of anastomosis. The distal jejunal loop is placed at the lesser curvature of the stomach rather than at the greater curvature. Theoretically, this permits the flow of food along the lesser curvature of the stomach (Magenstrasse) to continue di-

rectly into the distal jejunal loop. It would seem that the main flow of food would require "regurgitation" from the proximal loop were it placed at the lesser curvature. It therefore seems plausible that this would produce dilatation of the proximal loop. Since the "antiperistalic" anastomosis has been used routinely by the authors, not one instance of proximal loop dilatation has occurred. This fact has been confirmed by postoperative roentgenograms of every resection (fig. 3).

Removal of more than one-half the stomach has been discontinued. While removal of less than one-half the stomach may result in undue occurrence of stoma ulcers, our experience indicates that resection of one-half of the stomach is adequate. There was a complete absence of free hydrochloric acid in all but two of our cases two months after surgery. In these two cases, reductions of free hydrochloric acid from a maximum of 32 degrees to maxima of 8 and 12 degrees, respectively, were obtained.

Transfusions of 500 c.c. of citrated whole blood were given routinely during every gastric resection, to prevent shock. With this measure, there has been little or no reaction incident to the surgical procedure. The importance of this adjunct cannot be overemphasized.

Spinal anethesia supplemented by sodium pentothal intravenously, was used with all of the cases.

The importance of team work in surgery of this type should be mentioned. The cases reported in this series were all operated upon by the same surgeon, the same first assistant and the same operating room crew. The medical aspects of the treatment of these patients were supervised by one of the authors (Danglade).

Postoperative consideration. Continuous, Wangensteen suction is not employed routinely except following combined procedures and in cases in which the stomach wall is thickened and edamatous from obstruction. The physicians and nurses helping to care for these patients postoperatively, are instructed to watch for three symptoms, any one of which indicates beginning dilatation of the stomach. These are, hiccoughing, belching and an increase in the pulse rate disporportionate to temperature elevation. If one or more of these symptoms is noted, the stomach is immediately lavaged and the stomach tube removed. Usually no further intubation is necessary. If the patient is not carefully watched, however, and gastric dilatation occurs to a degree that produces vomiting, continuous suction usually will be required for two or three days. It is obvious that there is no substitute for close observation and detailed postoperative care. If this cannot be accomplished it is probably better to use continuous suction as a routine. This *we* have found to be entirely unnecessary.

The patient is permitted one to two ounces of tap water by mouth every hour during the first and second postoperative days. The fluid intake is supplemented by parenteral fluids as indicated. On the third postoperative day, small, frequent feedings are started. These are increased daily, both in quality and quantity. The diet is augmented with ascorbic acid and thiamin.

Routine measures to prevent vascular and pulmonary complications are employed. These consist of deep breathing, bicycle exercises, frequent turning in bed and early ambulation.

SUMMARY

1. Six months' experience in surgery of the stomach and duodenum at a naval hospital has been reviewed.

(Continued on page 236)

Plastic Reconstruction of the Breast and Free Transplantation of the Nipple

(Author's One-stage Operation. Microscopic proof of survival of transplanted nipple.)

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HYPERTROPHY of the breasts is not only an undesirable physical encumbrance from the esthetic point of view, but is a definite pathologic condition. It is responsible for a chain of clinical manifestations complained of by the patient, which may range from mild discomfort to great suffering. In the majority of instances, the excessive weight of the breasts causes dragging sensations, which the patient tries to relieve by suspension with brassiéres, the straps of which cause painful indentations and pressure symptoms. Perspiration frequently causes eczematous conditions under the breasts, particularly during hot weather. At times, psychic depression is observed (figs. 1 and 2).

Some consider hyperadiposity as a physiological condition, especially at certain periods of life, but as early as 1910 Howard A. Kelly wrote,[1] "To be a storehouse for useless adipose tissue and to carry this handicap around openly displayed wherever one goes, is one of the most distressing of life's minor ailments." Here the term "minor" should be considered advisedly; for, in many instances, as far as the patient is concerned, it very frequently becomes a "major" handicap.

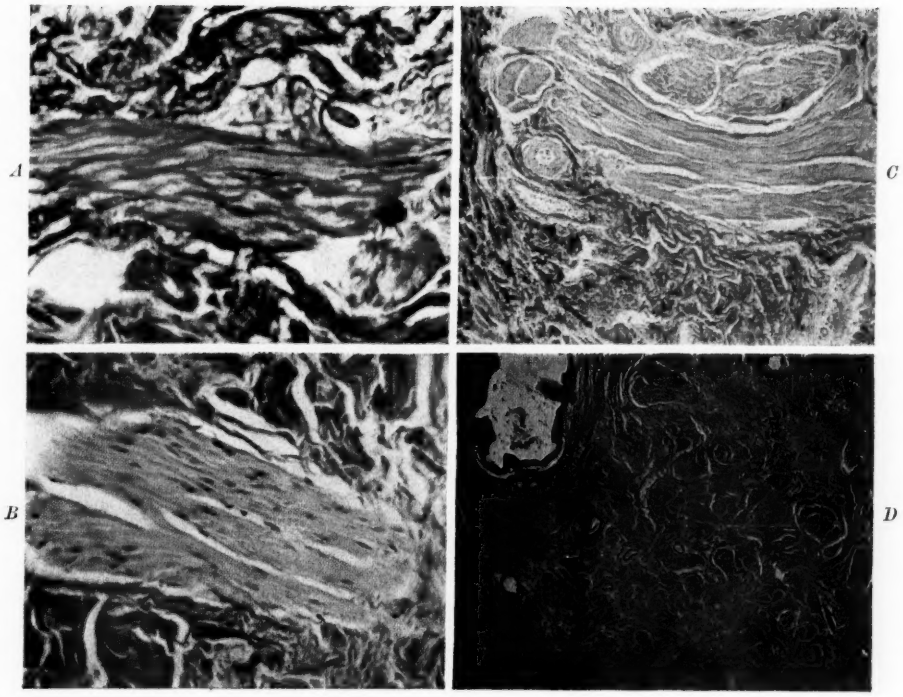
Psychic manifestations (depression, introspection, etc.), are quite often part of the symptom-complex and may, in certain instances, become quite troublesome. Following proper reconstructive procedures, psychic and physical relief often result and a more favorable outlook on life is generally noted.

So-called "virginal hypertrophy," unequal breast development, or pendulous and hypertrophied breasts, call for surgical intervention, because the excessive weight frequently causes circulatory disturbances and impeded lymph circulation, followed by a chain of complaints of greater or lesser severity. Valpeau, many years ago, spoke of this condition as *"engorgement hypostatique,"* and a multitude of operations have been described for its correction (figs. 3–9 incl.).

Hypertrophies of the breast vary in extent. In some instances the breasts may reach below the umbilicus. (fig. 10). In fact, here, as in many cases, the body configuration may be normal, the abnormality being limited to the breasts. Küttner reports a patient, an opera singer, who suffered from such enormous breasts that she was compelled to bandage them to the abdomen. This limited her respiratory excursion to such a degree that her voice lost in tone and volume.

As to the functions of these pathologically enlarged breasts, it is well known that such breasts are of little value as far as lactation is concerned. They are usually *functionally inactive organs.* It has been shown by many authors that women with hypertrophied breasts who have given birth to children, often find that they are unable to nurse them (Girard). Therefore, the impression that large breasts denote good function is not based on fact.

* Professor of Surgery, Cook County Graduate School of Medicine.



Microscopic sections of transplanted nipples showing the presence of nerves, muscles and milk ducts (see also microphotographs in monochrome in text).

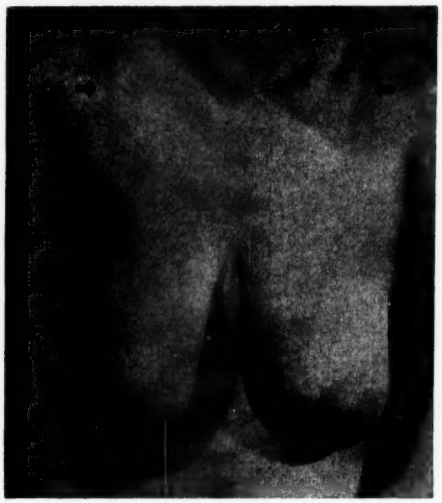
A. Nerve tissue. Mallory stain. High power magnification. Bundle of nerve tissue stained red running transversely across field. Tissue stained blue, represents fat.

B. Muscle tissue. Van Gieson stain. High power magnification. Here the muscular tissue is stained yellow, but the nuclei appear brown. Brick stained tissue surrounding muscle represents connective tissue.

C. Muscle and nerve. Masson stain. High power magnification. Here transversely running muscle bundles are seen stained a light green color. Structures as seen in cross section are nerves. On the left below the cross section of a nerve bundle, the cross section of a blood vessel is seen.

D. Galactophorous duct. Van Gieson stain. To the left a milk duct is seen in longitudinal section. Numerous blood vessels, capillaries and nerves, as well as connective tissue compose the rest of the field.

The causes for enlargement of the breasts are, (1) accumulation of fat, (2) insufficiency of the suspensory apparatus and (3) less frequently, hypertrophy of the glandular structure. Usually it is the excessive accumulation of adipose tissue which plays the predominant rôle. At other times, though much less often, the glandular elements predominate. Some authorities are of the opinion that the fat accumulated in hypertrophied breasts differs in composition from ordinary adipose tissue. Hypertrophy sometimes occurs before menstruation sets in, but is more frequent after that period and may occur at any time. The endocrine glands play an important rôle in the causation of breast abnormalities (figs. 11–19 incl.).



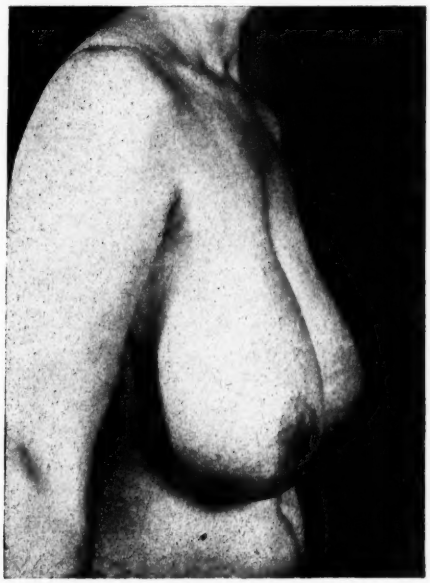


Fig. 1. Breast hypertrophy; patient complained of pulling sensation and symptoms from brassiére pressure. (Note arrows indicating impressions from straps.) Fig. 2. Same patient; side view.

While in the last half century French surgeons occasionally alluded to plastic procedures on the breasts, it was Girard who, in 1910, called specific attention to this type of reconstructive work. He compared pendulous breasts with floating kidneys, pointing out that just as a prolapsed kidney calls for occasional suspension, so should pendulous breasts, when indicated, be suspended *(mastopexy)*.

The ideal results one aims to accomplish in plastic reconstruction of the breasts are:

1. The newly re-formed breasts must be situated in their *normal position.*
2. They must be able to *function (endocrinologically).*
3. They must have the *form* and *size* of the normal breast and *no injury to the blood or lymph vessels* must result.
4. *Scars* must be as *inconspicuous* as possible.
5. Both breasts should be *symmetrical.*

Reconstructive operations on pendulous breasts may be divided into four principal groups:

1. *Suspension procedures* aiming to support the breasts from the costal cartilage of the second or third rib, (Girard).
2. *Transpositions of the nipple with remodeling of the breast tissue* (Lotsch [2]-Kraske,[3] Axhausen [4] and others).
3. *Multiple stage procedures* of which the Lexer [5]-Hollander, Joseph [6] operations are examples.
4. *Transplantation of the nipple with plastic reconstruction of the breast (one-stage operation of Thorek* [7–14]).

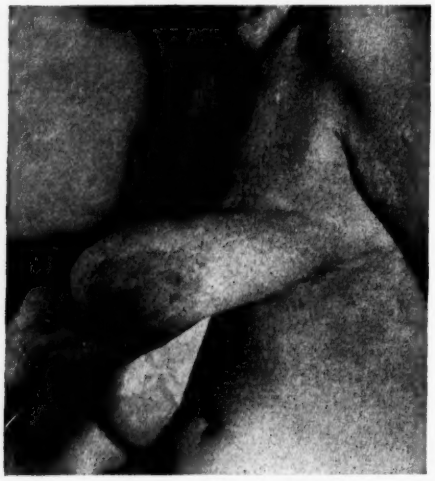


Fig. 3. "Pancake breast"; insufficiency of suspension apparatus.

It may be stated in passing that the term "plastic surgery" has justly grown into disfavor with general surgeons in many quarters because of its abuses by charlatans and by some surgeons who lack knowledge or training in this type of work. Plastic reconstruction of the breast requires, beside a thorough knowledge of the anatomy and physiology of the structures concerned, a high degree of mastery of technical details. Figs. 20 and 21 show the results of attempted plastic surgery on the breasts by an inexperienced operator. Such cases are regrettable and often represent not only downright lack of surgical conscience, but bungling attempts bordering on the criminal.

In the field of medicine and surgery, the "quack" has always been quick to seize the golden opportunity and has spread his bait very alluringly, offering to remove a variety of defects, to straighten distorted members and generally to substitute beauty for ugliness. No wonder that gullible Woman has laid the flattering unction to her soul and fallen into such fascinating snares, believing implicitly in these wonderful

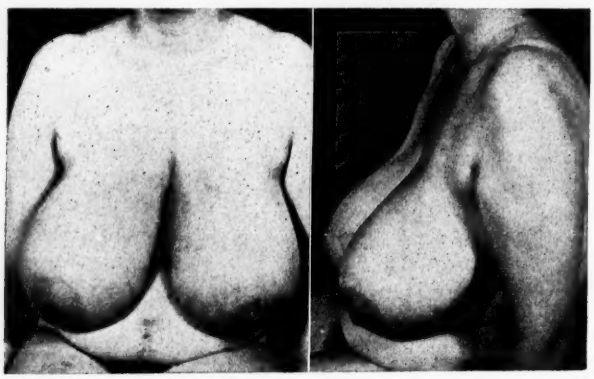


Fig. 4. Example of marked hypertrophy of breasts causing physical distress. Fig. 5. Same patient; side view.

cosmetics gods, who, in such wily ways, *for a fee,* promise to create a Venus out of a very Hecate or Medusa! The blatant advertising and even radio broadcasting of these unscrupulous cosmetic pirates, buccaneering under the title of plastic surgeons, have unfortunately drawn thousands of trusting women into their nets, only to despoil them of their last dollar, and, more often than not, leave them in a condition of suffering and disfigurement far worse than their original state.

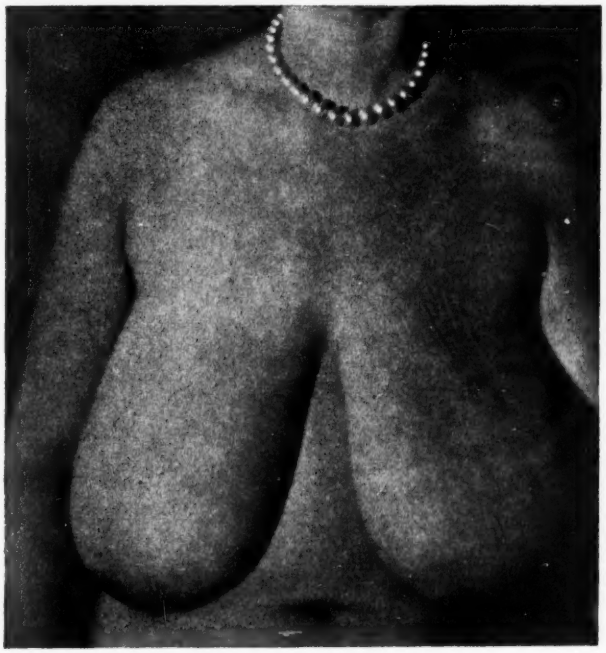


Fig. 6. Marked degree of virginal hypertrophy of breast with "pancake" compressions in upper segment.

However, it is refreshing to note that in many universities, chairs for the teaching of plastic surgery have been, or are being, established in order to wrest from the hands of imposters a branch of surgery in which special qualifications are the *sine qua non.*

The benefactions of this type of work have been manifested in the remarkable advances in plastic reconstructive surgery following World War I, as well as in reparative work on individuals who, by reason of modern demands (avocations) and physical handicaps resulting from pathologic malformations, have insisted that the well-trained surgeon afford them relief.

In plastic reconstruction of the female breast, it is not sufficient to possess an accurate knowledge of anatomy and physiology alone; such knowledge must be backed up with thorough special surgical training. Also, it is essential that the surgeon engaged in this work possess a definite sense of innate artistry, because this type of surgery represents "surgical artistry" or "surgical sculpture," if the terms may be permitted, of a very high order.

When these patients are turned down by the surgeon who, because of a lack of understanding or training, assumes a *laissez faire, laissez mourir* attitude,

they often drift into the traps of the charlatan. The woman with marked hypertrophy of the breasts finds herself burdened with a physical, social and mental handicap. It is easy to understand how such a person, particularly if possessed of high esthetic sense, or forced into frequent business contacts or public appearances (business women, speakers, singers, artists, etc.), would suffer keenly, both physically and psychically, because of her affliction. The mental depression occasioned in such individuals often manifests itself in the form of a more or less marked inferiority complex, which frequently causes the victim to withdraw from social con-

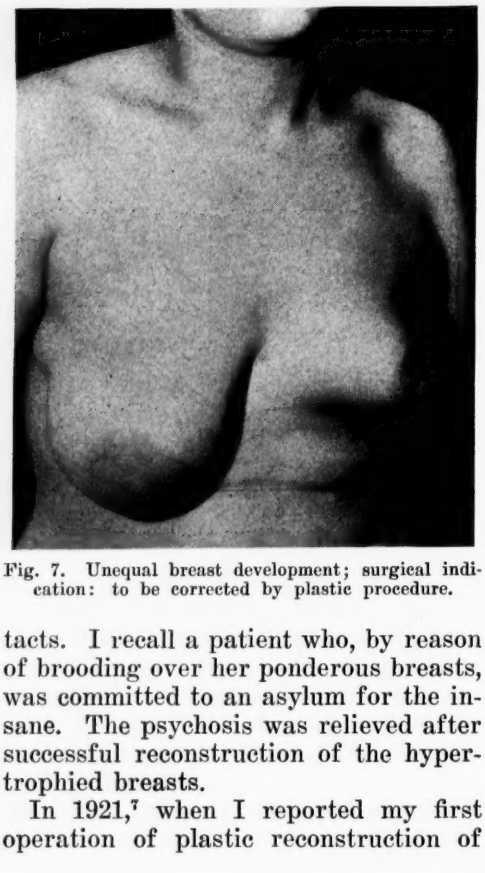


Fig. 7. Unequal breast development; surgical indication: to be corrected by plastic procedure.

tacts. I recall a patient who, by reason of brooding over her ponderous breasts, was committed to an asylum for the insane. The psychosis was relieved after successful reconstruction of the hypertrophied breasts.

In 1921,[7] when I reported my first operation of plastic reconstruction of the breast with transplantation of the nipple, in an address before the North Shore Branch of the Chicago Medical Society (and made it of published record in 1922[8]), I demonstrated for

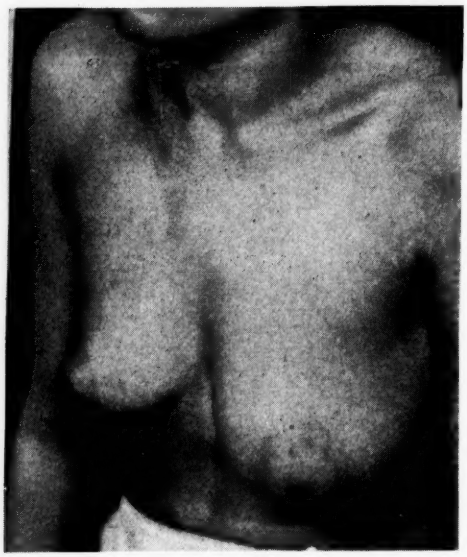


Fig. 8. Unequal breast development; surgical indication: to be corrected Lotsch operation.

the first time that it is possible completely to disconnect the nipples and areolae from their subjacent beds, and successfully to transplant them to a new position on a remodelled breast. After resorting to and studying many procedures, I have used the operation I devised for a quarter of a century, and it is now my operation of choice. I resort to it constantly with uniformly good results.

Other recorded methods had been tried with a high percentage of unsatisfactory results; in some cases, results so abominable as to have left an indelible impression upon me. A poll among my patients shows plainly a preference for the simple, one stage resection and reshaping of the breast, and free transplantation of the nipple, in-

stead of a multiple stage procedure with all the inconveniences and disappointments pertaining thereto (loss of time, unesthetic results, complications, etc.).

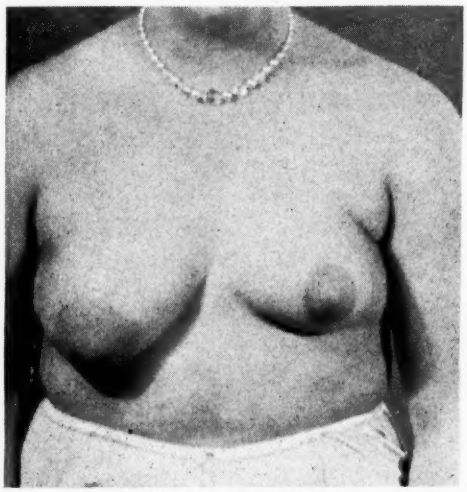


Fig. 9. Unequal breasts (endocrinopathy); surgical indication: to be corrected surgically.

It is true that in some of the multiple stage operations the result may be a better appearing nipple. But the patient very frequently emerges, into the bargain, with a misshapen breast (figs. 22, 23). This is particularly true in markedly hypertrophied breasts. In my one-stage operation, the results are uniformly well-formed breasts; the patients are pleased with the esthetic results, although the nipple is somewhat more flat than that resulting from multiple stage operations (figs. 24–35 incl.). In a large group of patients operated upon in the last twenty-five years, I have always asked whether they would prefer a more prominent nipple at the sacrifice of time, and with the risk of undesirable results in other respects (misshapen breasts, scarring, necrosis of the nipples, etc.), as seen in some cases. They invariably preferred the simpler procedure with the more esthetic results, rather than the multiple stage operation with the many possible occasional complications and not infrequent tragedies. There is, of course, a place for the Lotsch transposition operation [2] in a certain class of cases of minor degree of prolapsus and inequality of the breasts (figs. 36–40 incl.).

My one stage operation has been accepted throughout the civilized world; for many it has become the operation of choice. Dartigues of Paris [15, 16] was the

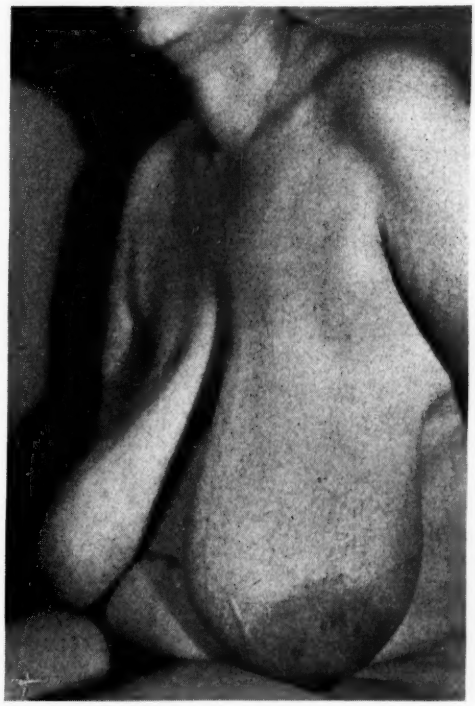


Fig. 10. Marked pendulosity of breasts causing a variety of physical discomforts; surgical indication: to be corrected surgically by author's operation.

first surgeon on the European continent to adopt my method and popularize it there.

Professor Axhausen, in 1926,[4] in discussing various plastic operations on the breast, referred to my operation and questioned the fate of the nipple in free

transplantation. He said, "If this important question could be answered in the affirmative, it would then certainly be better to resort to Thorek's operation than to court a possible necrosis of the nipple, should there occur a mishap by reason of a technical error in leave no areas for hematomas to form, *do unite with the underlying bed.* With further clinical proof, I am adding microscopic evidence (figs. 41–49 incl., and colorplate).

Professor Maurice Oppenheim † graciously examined the microscopic slides

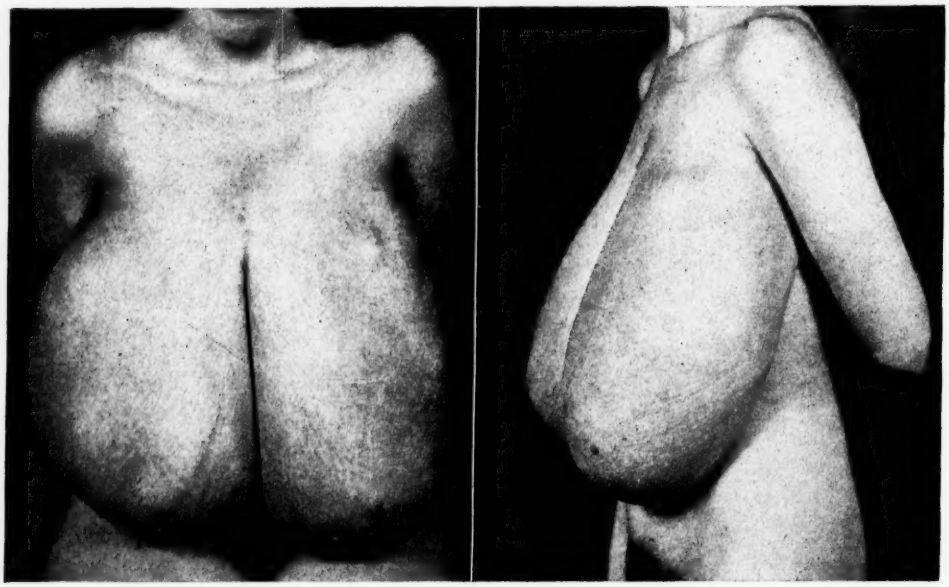


Fig. 11. Virginal hypertrophy of breasts; note lobular tumor in upper left quadrant of left breast.
Fig. 12. Same patient; side view.

performing a Lotsch (transposition) operation."

Recently, I was challenged again, this time by Dr. Jacques W. Maliniac,[17] * who says, "It is impossible to transplant the nipple free by now available techniques."

My original statement regarding the success of reconstruction of the breast and transplantation of the nipple are amply confirmed by the operations recorded in the last twenty-five years. Proof has been heaped upon proof that nipples properly transplanted, with raw surfaces closely approximated so as to

* In the Am. J. Surg., September, 1944.

of the sections of transplanted nipples, and after meticulous study, has found histologic proof of epithelial, muscular, ductal, nervous and glandular tissues normally present in the nipple. These findings were corroborated by Dr. Walter Schiller.‡

These authorities report their findings as follows: "The *epidermis* was found to be normal, the basal cell layer highly pigmented. In the *subpapillary* layer, there were connective tissue

† Internationally noted dermatologist, formerly Professor of Dermatology at the University of Vienna.

‡ Gynecologist, formerly of Vienna and now in the United States.

bundles, many enlarged blood vessels, particularly veins, without cellular infiltration. In the reticular layer, the connective tissue bundles showed greater acidophilic proclivities than in the subpapillary layer. Here also (in the reticular layer), there were no inflammatory products observed. In the *subcutaneous layer,* there were many nonstriped muscular bundles, particularly running in a longitudinal direction; some took a vertical course. In some places these muscle fibre bundles were very marked. The *blood vessels* and *nerve fibres* were of normal histologic architecture. Some of the specimens showed *galactophorous ducts,* and in others *sebaceous* and *sudoripherous glands* were seen."

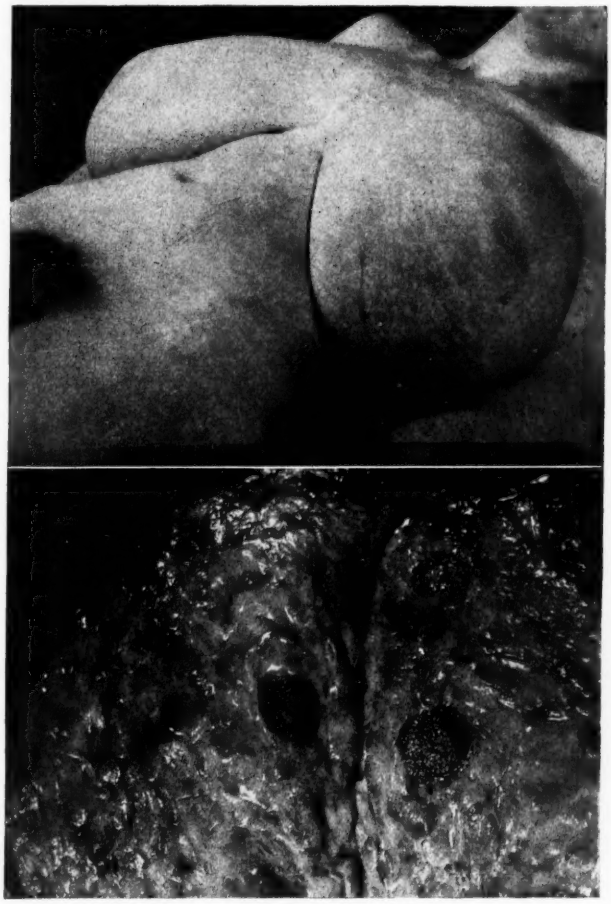


Fig. 13. Same patient as Figs. 11 and 12, in reclining position. Fig. 14. Gross appearance of tissue removed from patient in Figs. 11–13; note tumor in center of field.

Prof. Antonio Prudente * of Buenos Aires, recently reported that regeneration of the lactoferous ducts and glandu-

* Prudente, Antonio. Amputação Plástica do Mama na Mastopatia Fibrosa Crônica Cística—Regeneração Glandular. Separata Dos Arquivos de Cirurgia Clínica e Experimental. Vol. VI; ns. 2-3; Abril-Junho, 1942.

uar breast tissue has occurred in certain of his operative patients. He states:

"I think that it is of utmost importance to note certain observations made upon one of my patients who became pregnant shortly after the operation. *During pregnancy, her physician observed colostrum coming from the transplanted nipple. After delivery, about 30 grams of milk came from the nipple each day.*" (italics mine).

"There was enlargement of the new breast which could be the more readily appreciated through pictures sent me by the husband. In the beginning, I thought this impossible, but after meditating upon the question and listening to the opinion of Prof. Carmo Lordy, a noted embryologist, I came to the conclusion that I was confronted with *true glandular regeneration. In the case in question, this regeneration was possible because of the transplantation of the nipple reëstablishing communication with the lactoferous canals.* (italics mine).

"Now since the cells lining the ducts are the same as those in the embryo, they have the power to form new glandular acini. Therefore, due to the excess of foliculin existing in the circulation of a pregnant woman, it seems possible

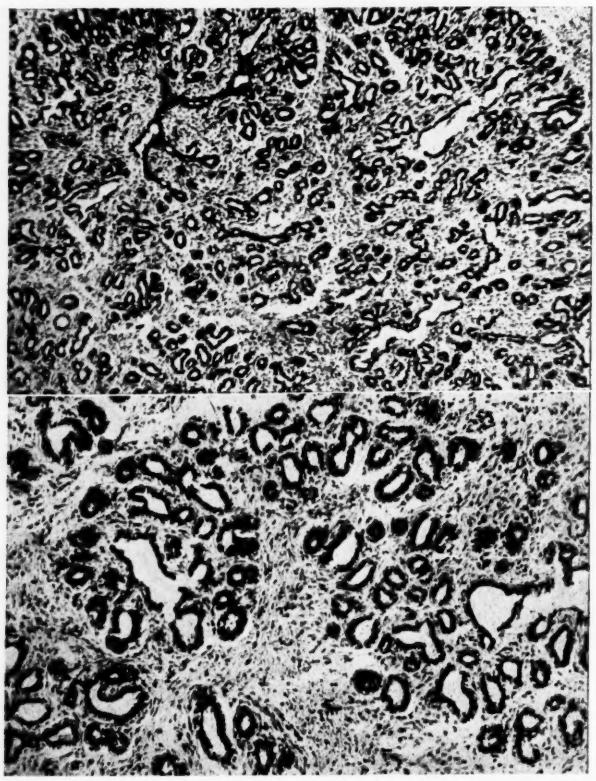


Fig. 15. Virginal hypertrophy of breast; marked lobular development of glandular structure and proliferation of interlobular connective tissue. Fig. 16. Same as preceding; lobules very distinct, proliferation of interlobular connective tissue marked and very cellular (X80).

that a similar phenomenon can be observed here to that which occurs in embryonic life.

"Convinced of the possibility of regeneration of the mammary glands, I tried to obtain histologic proof of this fact. It was not possible for me to persuade this patient to submit to biopsy. However, in two other cases, I had the opportunity to find pregnancy and could observe that below the transplantation of the nipple, there was forming a small, hard node, not fatty in character but of the consistancy of glandular tissue.

"So, in view of the possibility of beginning regeneration of the mammary gland in all these cases, I did a biopsy on a patient previously operated on my service in 1940. The biopsy was done one year later. Biopsy material was removed from a cherry-sized nodule which had formed beneath the transplanted nipple. The tissue was removed to a depth of 1 cm., and was examined by Prof. Carlo Foá of the Experimental Pathologic Faculty of Medicine of Sâo Pâulo; *the report was that there existed a true proliferation of new ducts, as seen in the appended microphotograph*" (italics mine) (fig. 65).

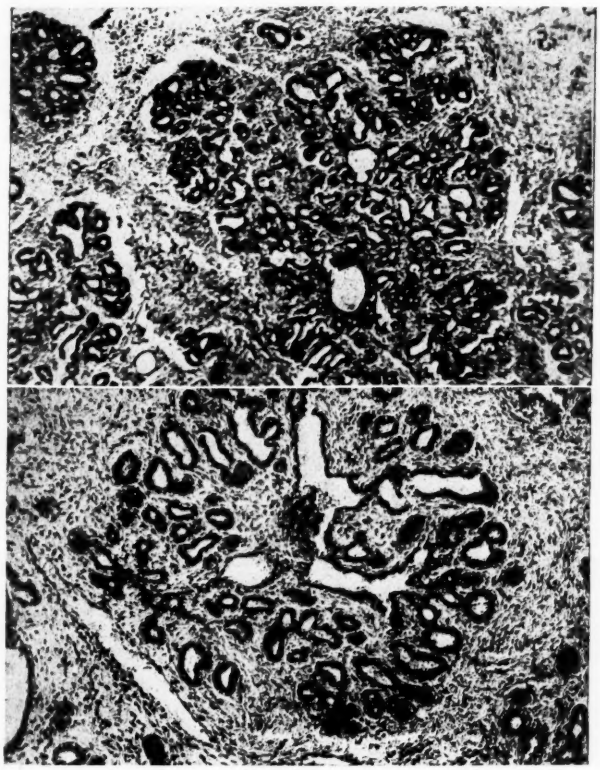


Fig. 17. Distinct lobular arrangement; some ducts markedly dilated (X60). Fig. 18. Shows one lobule, consisting of distended duct; inter- and intralobular connective tissues very cellular (X80).

"At this time, glandular regeneration acquires great biologic importance, especially from the functional standpoint. There is also a notable advan-

tage, from the esthetic point of view, due to the slight increase in volume of the new breast; this causes the nipple to stand out in a much more normal manner."

In the conclusions to his report, Prof. Prudente adds:

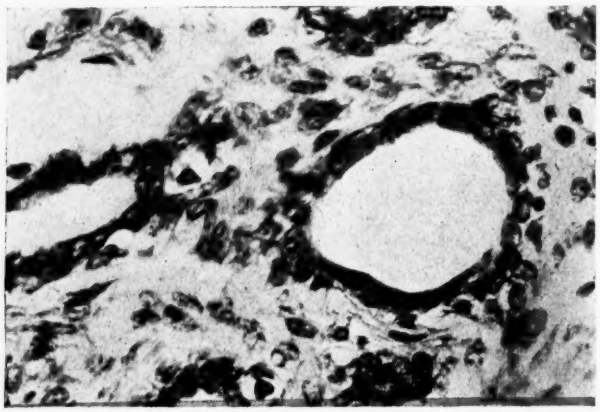


Fig. 19. Showing two acini lined by cuboid epithelium; vesicular nuclei of intralobular connective tissue clearly visible.

"When the terminal portions of the lactoferous canals are transplanted with the areola, the cells, having embryologic characteristics, have power to regenerate the glandular acini, which may be observed as regeneration of the mammary gland tissue; this being more pronounced in the presence of a pregnancy following the operation.

"Glandular regeneration, which is important even by itself, from the biologic standpoint, is even more useful from an esthetic standpoint, because the new glandular tissue serves as a support for the areolar mammary region."

Clinically, the presence of nerve and muscular elements is demonstrated by erection of the nipples. William Milton Adams,[18] who has also adopted my method, offers "additional proof that free transplantation of the nipples can be performed," and observes: "There was a definite erection of the nipples upon manipulation, which could only result from the contraction of the smooth muscle grafted with the nipple."

Too much has been made of the point as to whether the ducts are preserved in the transplanted nipple. While the microscopic studies here presented show *ductal elements present,* I wish to ask what importance can be attached to the preservation of ducts in breasts no longer functioning. The patient with pendulous, hypertrophied breasts is seeking relief from an embarrassing abnormality, an unbearable burden, a handicap in business and professional work. The prime object of the surgeon can therefore hardly be to preserve function in a breast of little lactophorous value.

Physiologic, anatomic and pathologic findings in point. While abnormal enlargement of the breasts may begin earlier, in the great majority of cases it occurs with the onset of menstruation (Geschickter[19, 20, 21]). Indicating the importance of the hormonal stimuli, the marked overdevelopment of the mammary gland occurs, bilaterally or unilaterally, during adolescence or during pregnancy. In diffuse virginal hyper-

Fig. 20. Unfortunate results of attempt by inexperienced operator to do plastic operation on breast; note necrosis of breast tissue and transposed nipple in axilla. (From Thorek's *Plastic Surgery of the Breast and Anterior Abdominal Wall,* courtesy of Charles C. Thomas.)

phies of the breast may take place at other times, to be sure, but a relationship to the endocrine and genital factors is evidenced in some way. For example, Küster says hypertrophy may occur

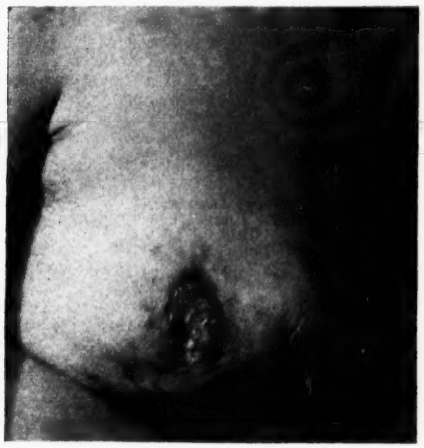


Fig. 21. Same patient as preceding showing opposite breast. Note total necrosis of nipple, sloughing and infection in lower segment of breast. (From Thorek's *Plastic Surgery of the Breast and Anterior Abdominal Wall,* courtesy of Charles C. Thomas.)

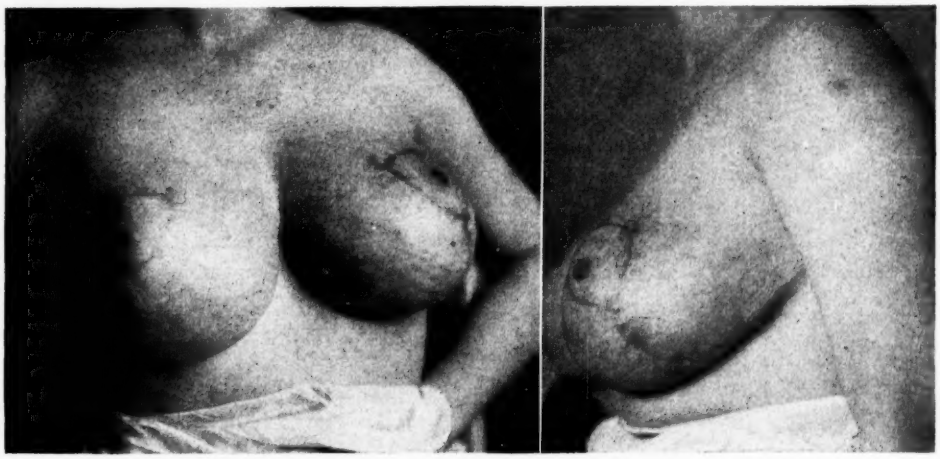


Fig. 22. Undesirable results of multiple stage operation for pendulous breasts; such cases are to be considered failures because of unesthetic appearance of breasts, conspicuous scarring and asymmetry.
Fig. 23. Same patient; side view.

trophy, occurring in adolescence, the overgrowth usually takes place within from three to six months. Hypertrophy following irradiation of the pelvic organs after a miscarriage.[22]

The greatest proportion of the over-

growth of the breasts is made up of accumulations of fat, which, according to some authorities, differs in some respects from normal adipose tissue. To a much less degree the glandular elements undergo hypertrophy. Frequently this overgrowth of the breasts occurs without weight increase in other parts of the body. It is also true that efforts to "reduce" may be effective in the body as a whole without reducing the size of the breasts, or may result in equally undesirable bags of skin which I have called *"reduction bags."*

The second factor in prolapsed and hypertrophied breasts, is the weakness of the suspensory apparatus which stretches as the weight of the breasts increases. That this weakness is a factor, and not merely the result of carrying excess weight, is seen in breasts where the degree of prolapse is far in excess of the amount of weight increase.

Sir Astley Cooper [23] described a *ligamentum suspensorium mammae,* a special division of the superficial thoracic fascia. Beginning at the clavicle this fascia extends to the upper part of the breast and divides so as to envelope the breast posteriorly and anteriorly. Thus, movement of the shoulder girdle raises or lowers the breast. The posterior envelope is usually more in evidence and posteriorly the breast is connected to the pectoralis muscle. The connection is by means of a very loose layer of areolar tissue allowing for greater mobility of the breast rather than adding to its support. The development of the suspensory apparatus varies in different individuals (Testut, quoted by Girard [24]), being very evident in some, and difficult to demonstrate in others,

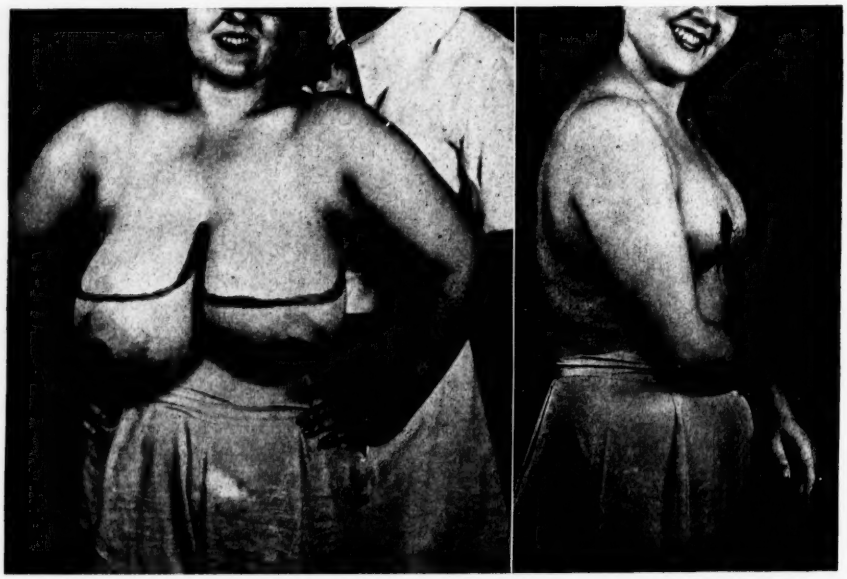


Fig. 24. Virginal hypertrophy of breasts, before operation; note tremendous enlargement and venous engorgement. The breasts descend to level of, or below, umbilicus. When sitting, breasts are below umbilical level. Outlines on breasts are guides for incision in formation of anterior flaps. Fig. 25. Same patient as preceding, 12 days after operation; note temporary discoloration of nipple affecting uppermost layer (stratum corneum). This desquamates and nipple of normal color is revealed.

and very often quite different from what textbook description would lead one to expect. The skin, covering the breast with fibrous septa extending inward and pocketing the glandular

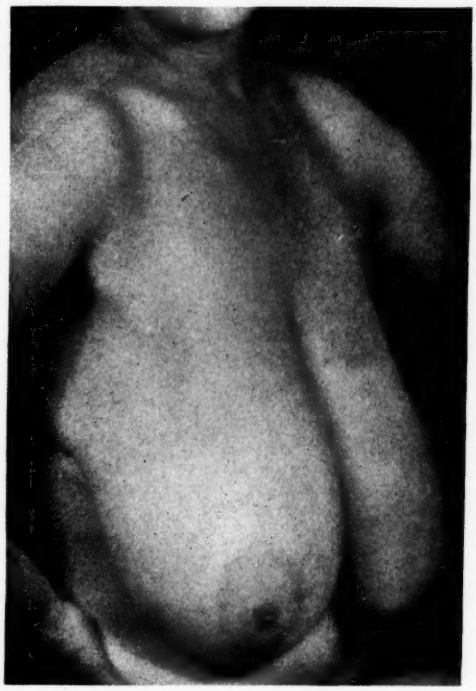


Fig. 26. Enormous hypertrophy of breast before operation.

tissue, supports the breast. Küster believes that the skin is the most important means of suspension.

The arrangement of the *blood supply* simplifies plastic surgery of the breast. In the lower portion of the gland, the blood vessels are few and unimportant. This part of the breast can be removed without disturbing the blood supply of the remaining portion. Laterally, the breast is supplied by branches of the axillary artery; the internal mammary artery furnishes branches extending from the first to the fourth intercostal spaces. The nutritive arteries from both sources occupy superficial positions lying practically just beneath the skin and giving off branches that are not traceable to a depth of more than two to five centimeters. Furthermore, these fine rami anastomose and communicate freely. Vessels from the underlying pectoral muscles do not enter the gland. The plastic surgeon could not ask for a freer hand than that afforded by this arrangement of blood supply. He needs only to avoid injury to the branches of the internal mammary

Fig. 27. Same patient as Fig. 26, after operation.

artery, as interference here would lead to breast necrosis. From the surgical viewpoint, Wolfer [25] says: "Plastic procedures which are designed to elevate a large pendulous breast can be carried out with comparative safety so far as the blood supply is concerned, since there exists inferiorly an area in which vessels are few in number. For this

reason, also, excision of breast tissue should be made from the inferior, not from the superior portion."

Eckhardt has described the *nerves* of the mammary gland. The *vagosympathetic nerves* excite the erection of the

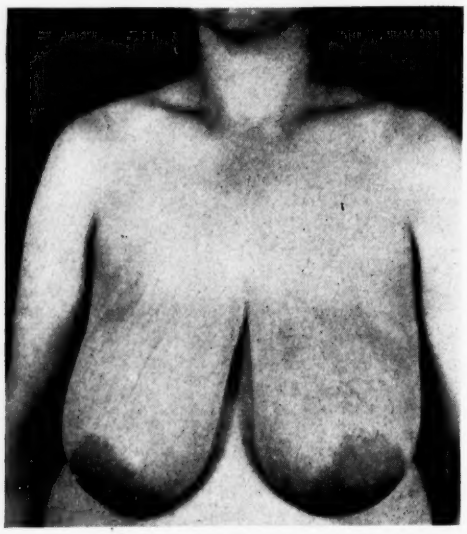


Fig. 28. Virginal hypertrophy of breasts.

nipple, and may have a regulatory action upon the galactogenic hypophysary function. Severing the motor path does not affect the nipple reflexes.

As already stated, hypertrophied breasts in general have little functional value. Women with hypertrophied breasts often find after childbirth that they cannot nurse their infants. There is no loss then if, after plastic surgery, the breast fails to function as a lactophorous organ.

Reconstruction operations on the breast. The conscientious surgeon must not rest content with the study of the anatomy and physiology of the breast alone, but must also become familiar with the various types of operations. He must evaluate the results which may be obtained from each given procedure.

One type of operation aims at suspension of the breast, after resection, using the costal cartilage of the second and third rib. Operations bearing the names of Lotsch,[2] Axhausen,[4] Kraske[3] and others, involve remodeling the breast and transposing the nipple. The third type of operation requires two and even three or four stages (Joseph,[6] Lexer-Hollander[5]), and involve (1) partial detachment of connections be-

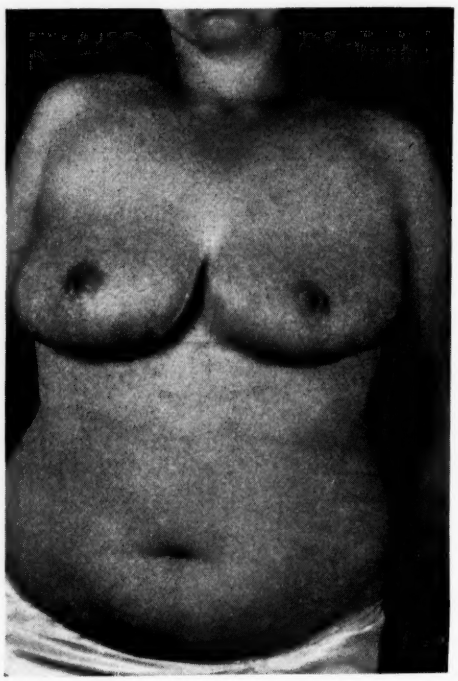


Fig. 29. Same patient as Fig. 28, following operation (author's technic); note excellent results in transplanted nipples.

tween the breast proper, the overlying skin, and the nipple, (2) excision of tissue to reconstruct the form of the breast, and (3) proper placing of flaps.

Of these types, the Lotsch[2] operation may be used when the prolapse is not extensive, but in the greatly prolapsed and hypertrophied breast, multiple stage operations cannot be depended

upon to secure satisfactory results. The possible complications and uncertain results of multiple stage operations have already been considered. Beside subjecting the patient to much unnecessary loss of time, these multiple operations are often followed by a variety of complications. · Of these may be mentioned, besides unsatisfactory results, (a) postoperative shock; (b) hemorrhage; (c) fat necrosis; (d) infection; (e) sloughing of the necrotic breast tissues with loss of the nipple; (f) systemic manifestations as a result of septic invasion.[26, 29]

In my one-stage operation for reconstruction of the breast with transplantation of the nipple, there are still a few facts to be emphasized. The surgeon

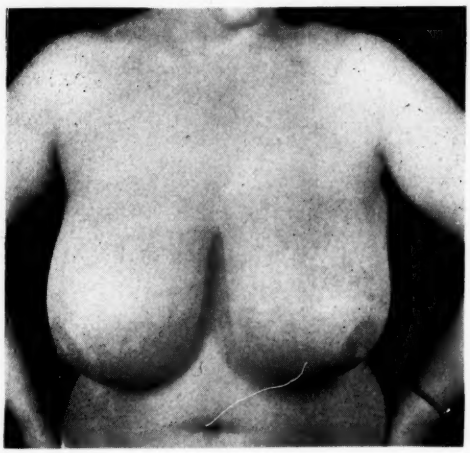


Fig. 30. Marked hypertrophy of breasts prior to operation.

must be properly trained in general reconstructive surgery. He must use a fine degree of artistry in obtaining an entirely esthetic result, bilaterally equal and symmetrical (figs. 45–49 incl.). No operation should be planned unless definitely indicated and unless no contraindications, such as diseases of the heart, lungs or kidneys exist. The patient must be carefully studied prior to the operation. The line of incision must be determined with the patient in a semi-sitting position—*never* with the patient lying down. The position of the nipples is selected after the breasts are reshaped. Technical details follow:

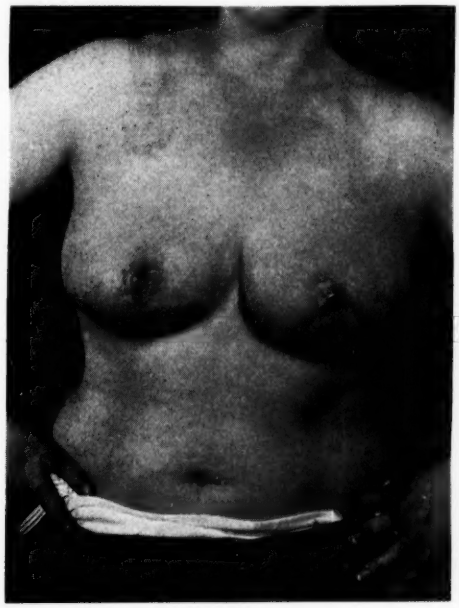


Fig. 31. Same patient as preceding, 3 weeks after author's operation.

OPERATION

1. *Anesthesia.* In days gone by, ether, ethylene, or cyclopropane were the anesthetics of choice. Local infiltration anesthesia is as undesirable as it is ineffective in undertakings of any magnitude in plastic resection operations. At present, I use intravenous anesthesia (sodium pentothal), with excellent results.

Both breasts are operated on at the same time, the average time of operation for both breasts being about two hours. It is needless to stress that the anesthetist must be well trained in administering this type of anesthesia.

2. *Position of the patient on the table.*

The recumbent position distorts the appearance of the breasts; a semi-sitting position is used exclusively in operations of this type. The markings as to where the incisions should be made and where to place the nipples should be taken care of a day or two prior to the operation. For effective marking of these outlines, the author has used brilliant green, mercurochrome, iodine, etc. These, however, are nonresistant to the materials used during the presurgical

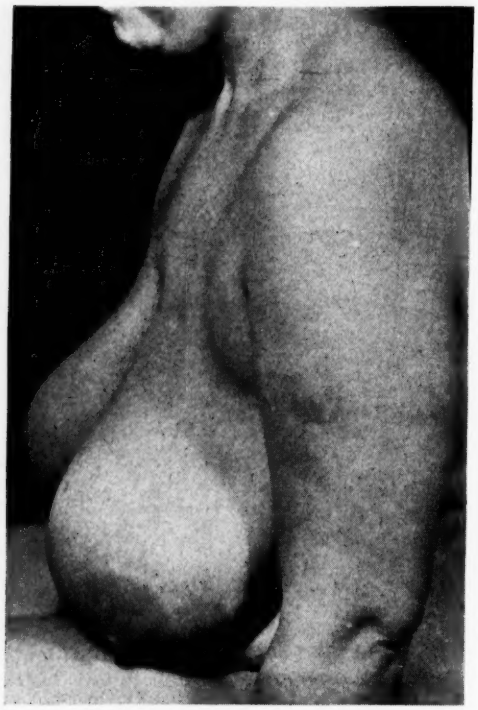


Fig. 32. Enormous hypertrophy of breasts causing much physical discomfort.

preparation of the patient, and often scrubbing obliterates them to such an extent that the surgeon finds difficulty in recognizing the outlines. The most enduring material for markings that I have found thus far is a concentrated solution of silver nitrate. This is used to outline the course of the incision, is permitted to dry and is then gone over with tincture of iodine. This, carried on proper sized cotton applicators, causes a tracing of silver iodide to appear, which resists the usual attempts

Fig. 33. Same patient as Fig. 32, following author's one-step operation.

at removal. It must be stressed, however, that in using the silver iodide method, the application of the silver solution must be done cautiously, lest unpleasant skin irritations result. In late years, I have abandoned extensive outlines, and now indicate the incisions on the surface of the breasts. With experience, one's improvement in technic augments. It must be kept in mind

that here, as in plastic surgery on any other part of the body, it is always wiser to outline a larger flap than a smaller one. The former can always be trimmed to the desired size, but the latter can cause embarrassing inconvenience or failure. Complicated measurements are confusing. I no longer outline the position of the nipple on the remodelled breast prior to operation, but after reconstruction of the breast, the area is studied and the nipple implanted in the most desirable position. In outlining the incision for the areola and nipple, it is well to circumcise the nipple and a part of the areola to the desired extent. Two semi-curved incisions are now extended in either direction from the central point of the areolar outline encircling the nipple, one incision extending toward the axilla, the other

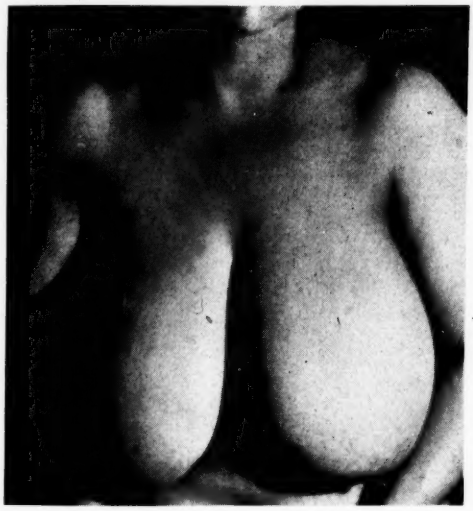


Fig. 34. Marked pendulous hypertrophy of breasts.

toward the sternopectoral fold. The second or lower incision outline is made at the mammary fold, underneath the hypertrophied breast. This should not be placed too high on the breast, nor too low on the thoracic wall. One should place the incision exactly in the *crease* where the breast is attached to the thoracic wall.

3. *Detachment of the nipple.* A circular incision is made, encompassing the nipple and as much of the areola as

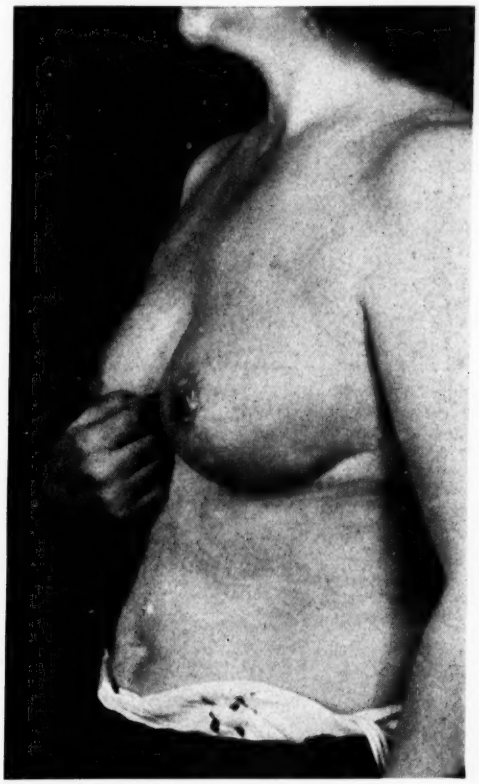


Fig. 35. Same patient as preceding 3½ weeks after author's operation.

desired, depending upon the individual case. This may be enhanced by placing a transparent medicine glass of appropriate size over the nipple, with the nipple in the center; the scalpel outlines the area. The surgeon of experience will outline such area without the aid of a guide. The entire nipple, including some muscular elements entering it, together with the subjacent structures is placed in warm sterile water, the con-

tainer being supplied with a thermometer and the water kept at a temperature of between 99° and 99.5° F.

4. *Detachment of flaps.* The superior breast flap is now detached upward by sharp dissection, for as great a distance as seems desirable, depending upon the size of the breast. The lower flap, which I routinely undermined in my previous operations, is now left untouched, following the principle advocated by Lahey in doing thyroidectomies where the flap overlying the thyroid is reflected upward toward the pomum Adami of the larynx and the lower flap is left unmolested.

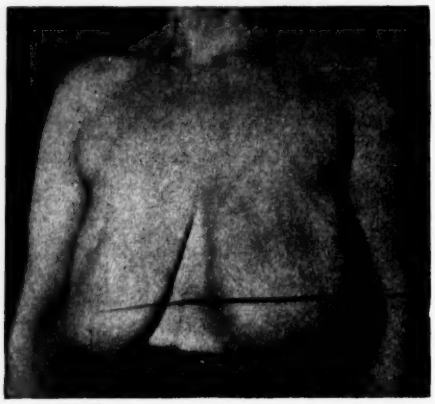
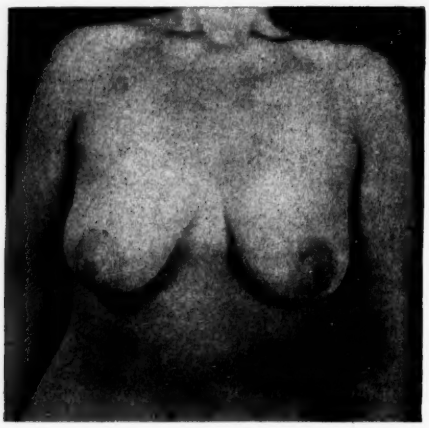


Fig. 36. Breast pendulosity; so-called "pancake" breast, resulting from many year's compression with tight brassiéres. Multiple-stage operations do not, as a rule, yield good results in these cases. Satisfactory results are more likely with a simple plastic reconstruction (operations of Lotsch, Kraske, etc.).

5. *How much breast tissue should be removed?* The surgeon, now confronted with the bared, hypertrophied breast, has to decide how much tissue is to be removed. One should fashion the breast according to the size and general physical configuration of the individual patient. It would be folly to form an excessively small breast on a patient of large frame, or *vice versa.* Patients who have suffered the many inconveniences of hypertrophied breasts are inclined to insist that the breasts be made as small as possible, but the surgeon should not be swayed in either direction —he should ablate neither too much nor too little. With a sharp scalpel, the necessary amount of breast tissue is excised, in a semicircular fashion.



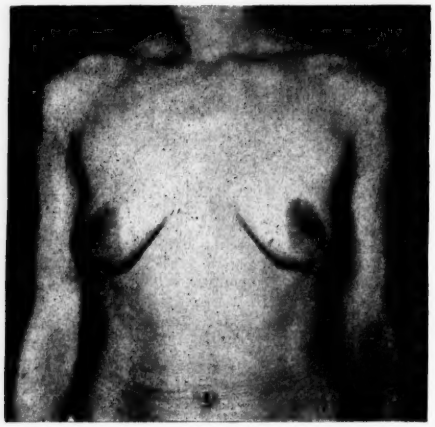


Fig. 37. Mild degree of mastoptosis; Lotsch operation suitable in such cases. Fig. 38. Another example of case suitable for Lotsch procedure.

The freely dissected upper skin flap is now pulled over the reshaped breast to indicate the size and appearance of the breast after the operation is completed. At this stage, the judgment of the surgeon must again be his guide.

The important factors now to be considered are the following:

(a) Hemostasis. This must be perfect.
(b) Suture material. In our work

Fig. 39. Mild degree of mastoptosis, correctable by Lotsch procedure.

we have abandoned catgut completely. Cotton of appropriate size, (triple O Gudebrod) depending upon the size of the particular vessel, is used. Larger vessels require appropriately larger sizes. Dr. Phil Thorek[27, 28] has been using much smaller sizes—100 to 150, with excellent results. It stands to reason that the finer the cotton, the less the tissue reaction and the better the results. Cotton has been used in most of our surgical work as a suture material.

Having reshaped the breast to the proper size, and having assured hemostasis, which may, by the way, be effected, where the smallest vessels are concerned, by electrocoagulation, the exposed breast, reformed, now rests on the thorax. It is thoroughly dried and sprinkled with sulfadiazine. Not too much and not too little—a "frosting" is all that is necessary.

6. *Shaping and suturing the flaps.* The upper cutaneous flap is now properly centered, and as much of the redundant tissue removed as desired. Its central portion is accurately sutured to a corresponding point on the lower flap with some form of nonabsorbable suture material, carried on a skin needle. The choice of suture material is optional. Our preference is for cotton sutures (Gudebrod) throughout.

It will now be observed that the lateral portions of the flaps need proper shaping and trimming. A properly placed curved stomach clamp is of great aid here for bringing the flaps into proper

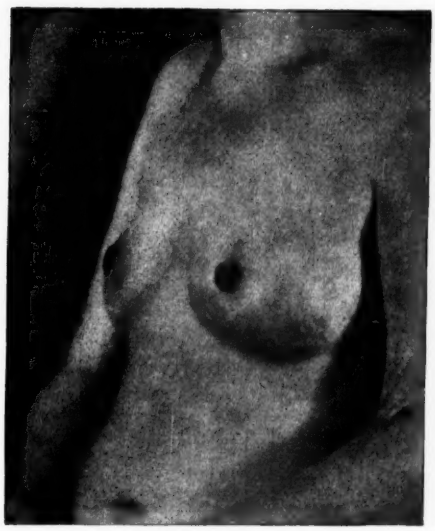


Fig. 40. Results in mild degree of mastoptosis following Lotsch transposition of nipple.

alignment. The clamp should be placed not too high on the skin flap to be cut away, and not so low as to leave too great a redundancy. The redundancies are now ablated with a sharp knife or scissors, the flaps are approximated and fixed in place with interrupted sutures.

It is important so to place the flaps as to avoid too conspicuous scarring. At this stage, the innate artistic talent of the surgeon comes into its greatest play. Experience here is the best guide. In a properly performed plastic reconstruction of the breast, with the technic here outlined, the scars, after healing, should be not only inconspicuous, but in the main invisible, being hidden in the submammary fold.

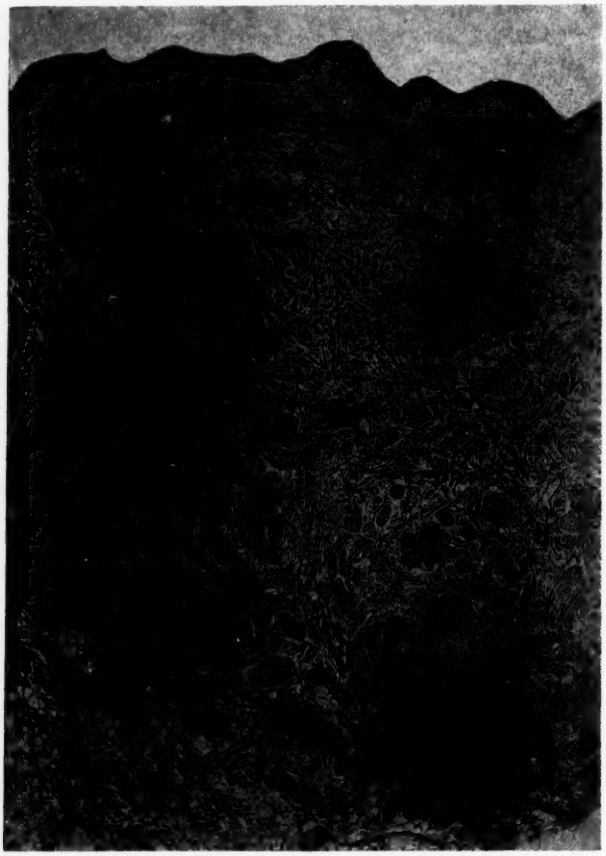


Fig. 41. Transplantation of nipple, 3 months after operation; VanGieson stain, low magnification; *E*. epithelium; *N*, nerve.

7. *Implantation of the nipple.* The surgeon now ascertains the best position on the reshaped breast on which to implant the detached nipple. With a sharp pointed scalpel he outlines or detaches a circular area of tegument corresponding to the size of the nipple; this must be somewhat smaller in circumference than the detached nipple. If made larger, it will put the newly implanted nipple on the stretch which may be followed by undesirable results. It is important that during the preparation of the new bed for the reception of the nipple only the deepest layer of the skin should be exposed. At no time should the subcutaneous tissues come into evidence. *This is important.* In a properly prepared bed for the nipple

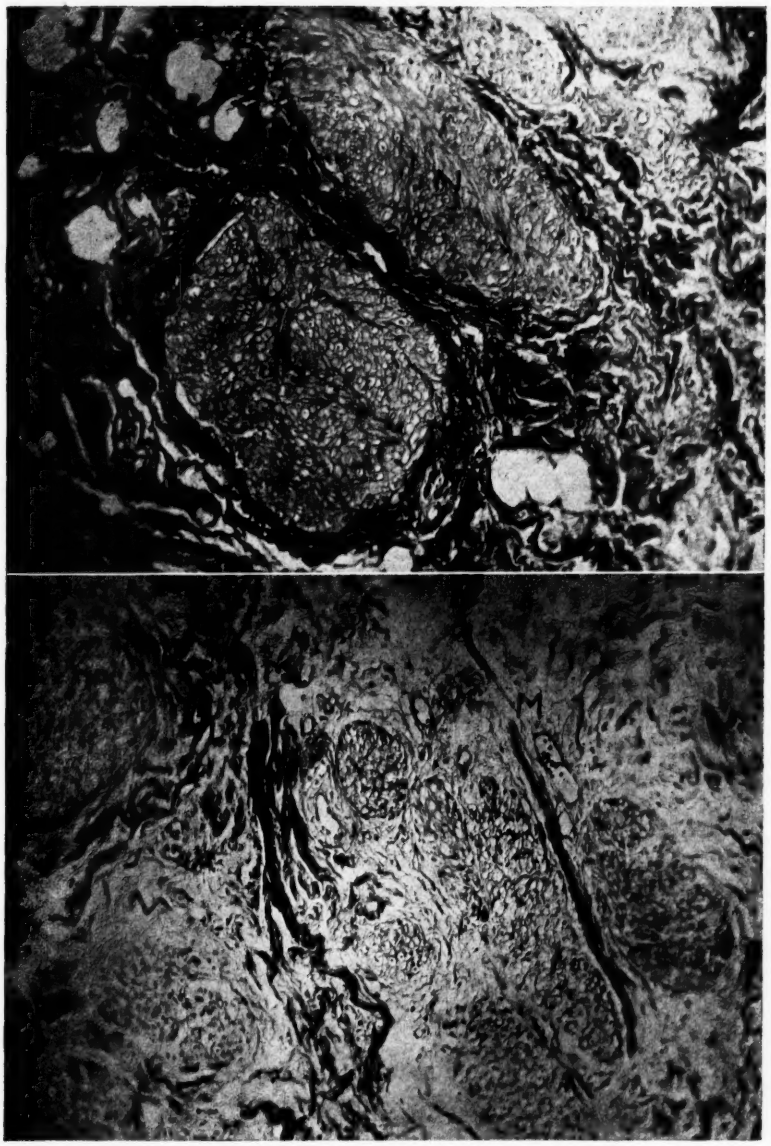


Fig. 42. Transplantation of nipple, 3 months after operation; VanGieson stain; magnification 150 x; *NN*, nerves. Fig. 43. Transplanation of nipple, 3 months after operation; Masson stain; magnification, 130 x; *M*, muscle fibers in longitudinal section.

there will be only moderate capillary oozing observed. This oozing is readily controlled by the application of hot compresses, or by monopolar fulguration of the bleeding points, or by grasping the small vessel with a very fine artery forceps, and closing the little stoma by torsion. When the nipple bed is thus prepared, the detached nipple is withdrawn from the warm sterile water,

excessive tissues trimmed off, keeping in mind that some muscular fibres and connective tissue elements should be retained, and placed on the prepared bed. A large, round intestinal needle transfixing the center of the nipple and The nipple is secured in place without tension.

Small punctures through the transplanted nipple and areola are effective insurance against undesirable accumulations; the stab punctures permit the

Fig. 44. Transplantation of nipple, 9 months after operation; VanGieson stain; low magnification; *E*, epithelium; *M*, muscle fibers; *L*, lactoferous duct.

penetrating deep into the breast tissue, will retain the nipple in place while the suturing of the edges of the transplanted nipple to the margins of the circular bed is carried out with care. Again, the transplanted nipple should never be on the stretch, but should be placed in its natural contracted state on the raw surface prepared for its reception. egress of accumulated blood elements.

8. *Reshaping of the second breast.* (figs. 50–54 incl.). This is frequently a difficult problem. Here a great deal of judgment is necessary. After cleansing the surface of the breast already operated upon with peroxide of hydrogen and thoroughly drying it and "frosting" it with sulfa powder, sterile pads

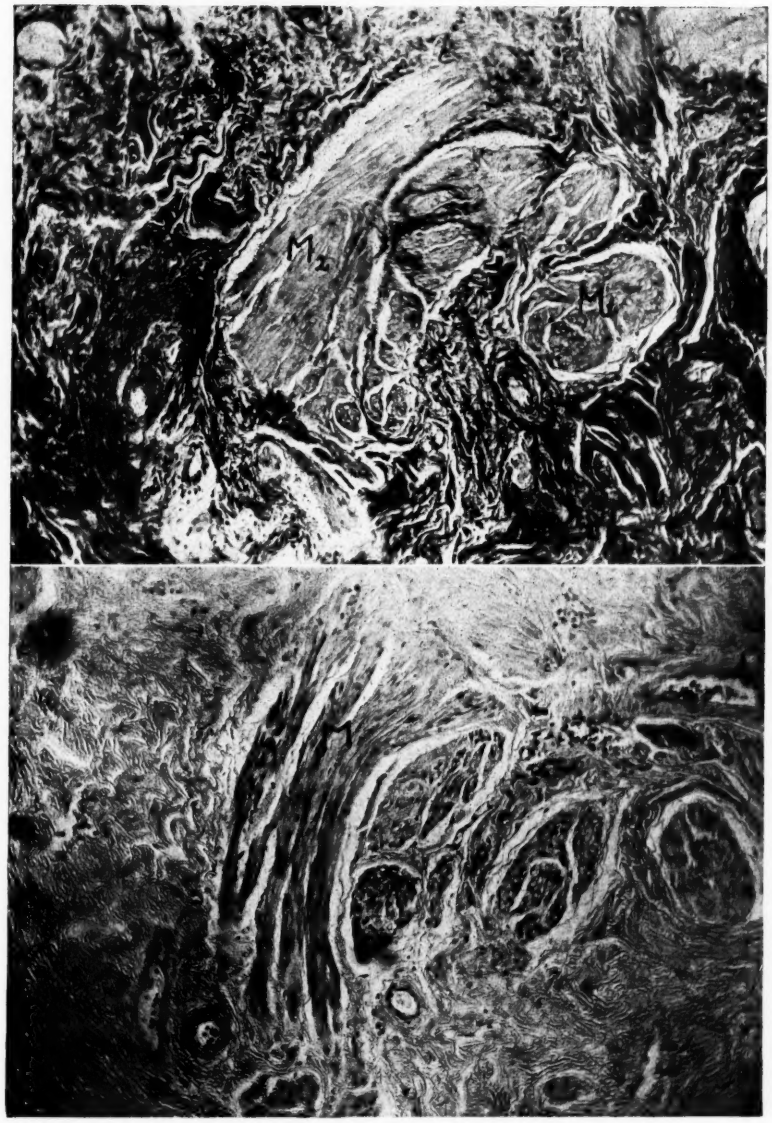


Fig. 45. Transplantation of nipple, 9 months after operation; VanGieson stain; magnification, 150 x; *M*, muscle fibers in cross section; M_2, muscle fibers in longitudinal section. Fig. 46. Same as preceding, showing muscle fibers in cross and longitudinal sections, stained with Masson stain.

are placed over it in such a manner that the surgeon may inspect it frequently without much disturbance, thus permitting him to orient himself and fashion the breast now to be operated on to the desired size, and prepare flaps of corresponding size and contour to occupy a position similar to those on the first breast. Here the skill of the surgeon is put to vigorous test. If,

Fig. 47. Transplantation of nipple, 9 months after operation; elastic fiber stain; low magnification; *E*, epithelium; S, sebaceous gland.

Fig. 48. Transplantation of nipple, 9 months after operation; elastic fiber stain; magnification, 150 x; *S*, sebaceous gland; *H*, hair shaft; *E*, elastic fibers.

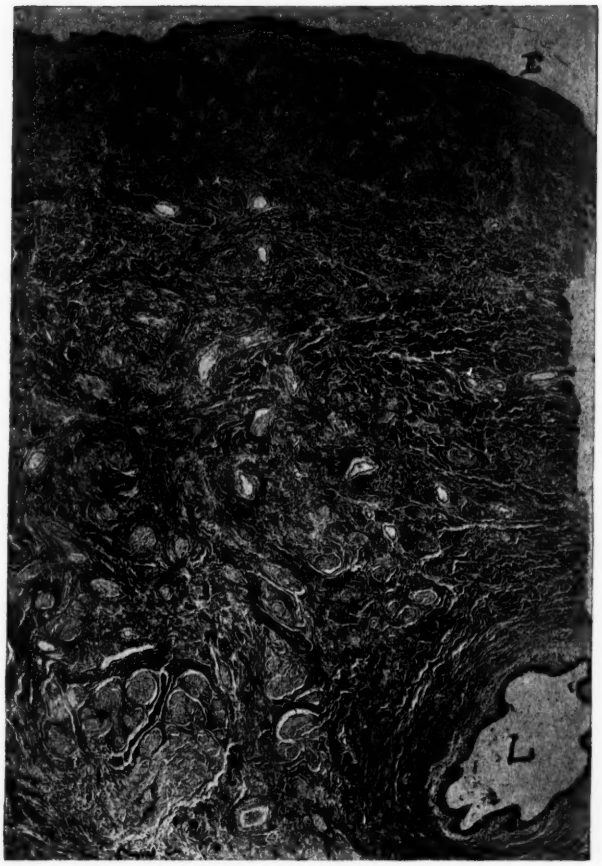


Fig. 49. Transplantation of nipple, 9 months after operation; hematoxylin-eosin stain; *L*, lactoferous duct of mammary gland; *E*, epithelium.

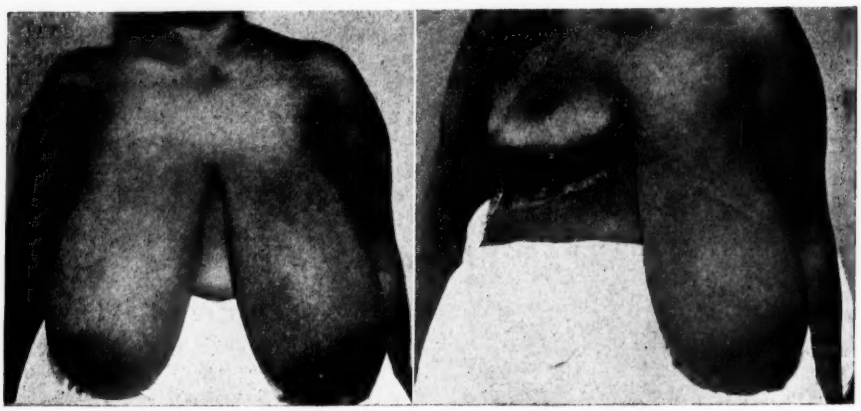


Fig. 50. Virginal hypertrophy of breasts, causing interference with functions (Author's service, Cook County Hospital, Chicago, Ill.); before operation. Fig. 51. Same patient as preceding, after operation on one breast by author's method.

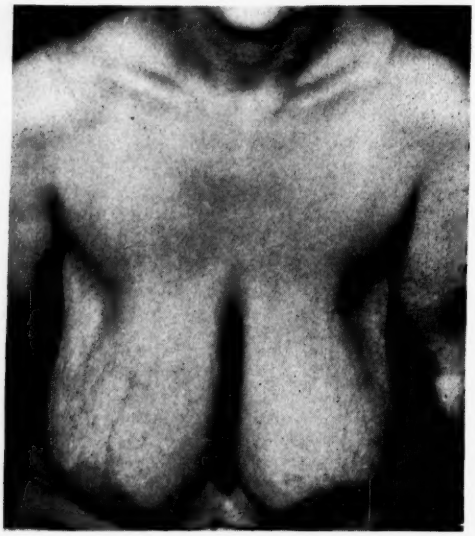


Fig. 52. Marked hypertrophy of breasts prior to operation.

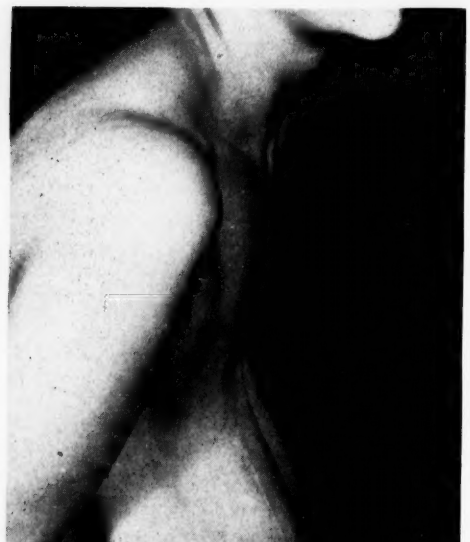


Fig. 53. Same patient as preceding; side view.

after completing the operative procedure on the second breast, it appears unequal as compared with the first, the surgeon should promptly rectify this condition, provided, however, that the patient's condition is good. On the other hand, should the operation have been

Fig. 54. Same patient as Figs. 52 and 53, 1 month after operation.

prolonged unduly, it is far safer and more prudent to apply dressings, return the patient to bed, and complete the operation on the second breast a few days later. With general precautions, experience and good technic such an occurrence should be rather rare. All our operations were completed in one stage. The precautions given are for the beginner who must needs proceed slowly, keeping the interests of the patient as the primary and most important objective.

9. *Postoperative care.* After the dressings are applied and the patient returned to her bed, it is the anesthetist's responsibility to give the postoperative orders as far as anesthesia

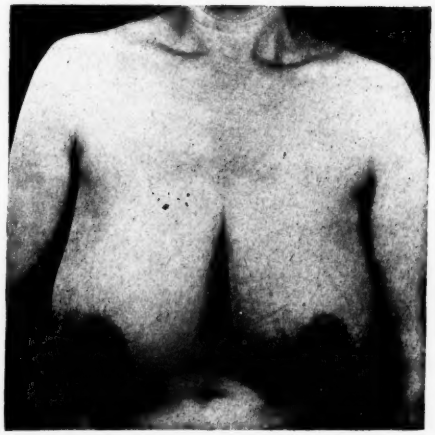


Fig. 55. Virginal hypertrophy of breasts.

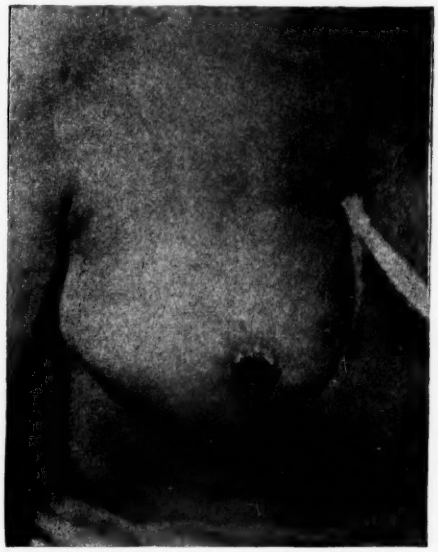


Fig. 56. Same patient as preceding; 2 weeks after operation. Satisfactory healing of nipple with beginning desquamation of uppermost layer (stratum corneum) of nipple surface; note new nipple underneath making satisfactory healing progress.

Fig. 57. Closeup of transplanted nipple, 3 weeks after operation, showing stratum corneum being cast off.

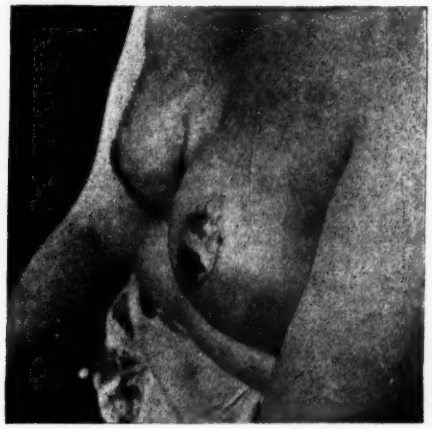


Fig. 58. Same patient as Figs. 55 through 57, 3½ weeks after free transplantation of nipple; note almost complete shedding of stratum corneum, with new nipple structure.

is concerned. There are special precautions to be observed where sodium pentothal has been used.

It is the surgeon's responsibility to see to it that the dressings are neither too tight nor too loose. The proper degree of compression is essential. Above all, the nipples must be safeguarded and undue pressure avoided.

Postoperative care does not involve special attention other than such as is afforded patients who have been operated upon for other breast conditions.

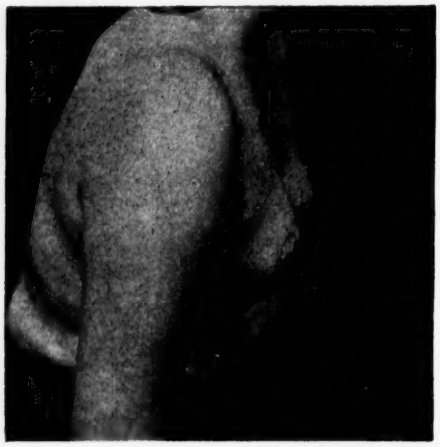


Fig. 59. Same patient as preceding; note desquamation with normally healed nipple structure beneath.

Fig. 60. Transplanted nipple in final stages of healing; note small fragment of stratum corneum remaining, with well-formed nipple structure beneath.

The temperature, respiratory and pulse rate and general feeling of the patient

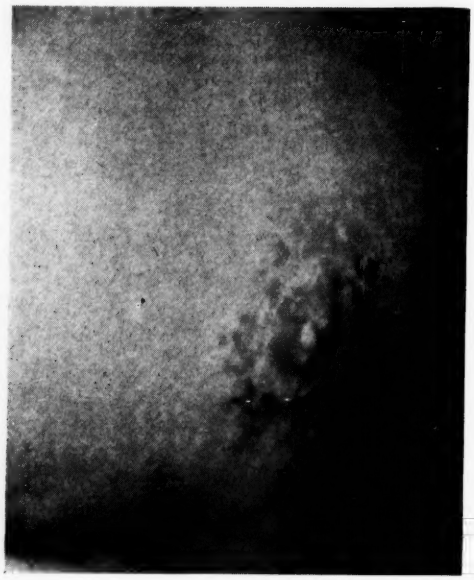


Fig. 61. Transplanted nipple showing complete healing, 1 month after transplantation.

will indicate the rules to be observed. The sutures are removed about 9 or 10 days after the operation, and the patient permitted to leave her bed at about that time.

10. *Special care of the nipples.* The patient must be informed that there will at first result a dark discoloration of the nipples. (figs. 55–61 incl.). This is due, as stated, to the desquamation of the surface layers of the skin. The exfoliation will proceed gradually leaving underneath the nipple healed in place. In some individuals this desquamation takes a few weeks, but the usual activities of the patient need not be interfered with. Patients may return to their work and usual occupations soon after leaving bed.

11. *Pigmentation.* At first, the pigmentation in the transplanted nipple is slight. Gradually as times goes on, however, the pigment increases and finally

complete pigmentation of the nipple takes place. (figs. 62–64).

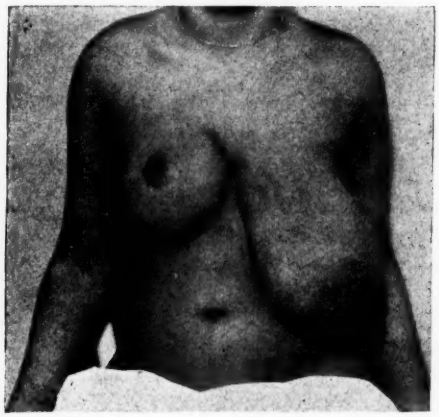


Fig. 62. Colored patient, aged 15; bilateral virginal hypertrophy of breasts; first half of author's operation completed. (Author's service, Cook County Hospital, Chicago, Ill.)

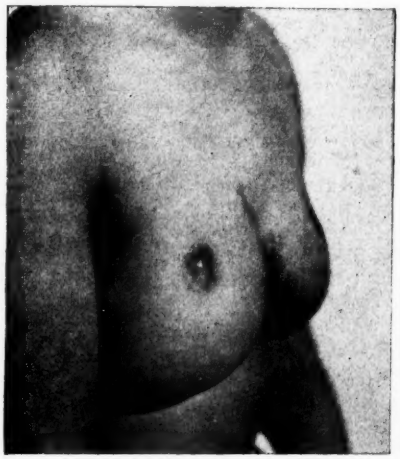


Fig. 63. Same patient as preceding; 2 months after transplantation of nipple; note partial pigmentation.

SUMMARY

Plastic reconstruction operations on the female breast are analyzed and various methods evaluated. Ethical, esthetic and technical requirements in this field of work are stressed. The value of the author's operation for plastic reconstruction of the breast with transplantation of the nipple is reëmphasized and a detailed description of the operative procedure and postoperative care given.

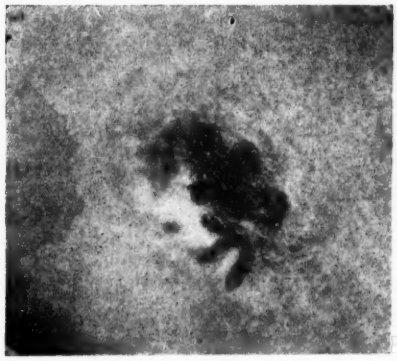


Fig. 64. Same patient as Figs. 62 and 63; 3 months after plastic reconstruction; note complete pigmentation of nipple.

Clinical and microscopic proofs are given, showing that transplanted nipples do live; proof is also offered (Prudente) that breast structure may regenerate and function.

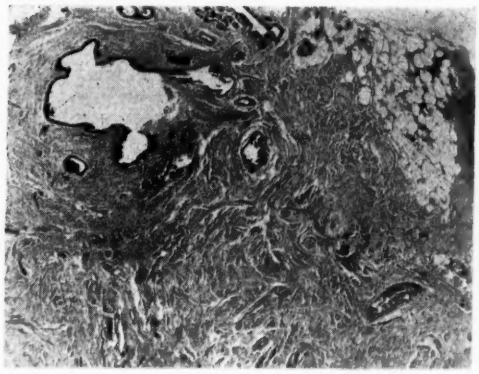


Fig. 65. Histologic preparation from lactoferous duct, showing proliferation after a plastic operation on the breast (histologic report of Prof. Carlo Foá, of the Department of Experimental Pathology of the Faculty of Medicine of the University of São Pãulo.)

RÉSUMÉ

La reconstruction plastique du sein féminin est discutée. L'auteur analyse

et évalue différentes méthodes. Les conditions requises, ethiques, esthétiques et techniques sont énumérées. La valeur de l'opération personnelle de l'auteur pour la reconstruction plastique du sein et las transplantation du mamelon est affirmée. Une description détaillée de la procédure opératoire et des soins post-opératives à donner à l'opéré ajoute une haute importance à cette communication.

RESUMEN

El autor analiza y cataloga, segun su valor, varios métodas para la reconstrucción plástica de la mama, poniendo de relieva la importancia de los factores éticos, estéticos y técnicos en este campo de la cirugía. Se realza aquí de nuevo el capital valor de la operación del autor para la reconstrucción plástica de la mama con transplante del pezón y se describen los detalles del procedimiento operatorio asi como se incluye los datos adecuados para el cuidado postoperatorio.

Свод

Сделан анализ и оценка разных методов пластической реконструкции женской груди. Подчеркнуты этические, эстетические и технические требования этой работы. Опять подчеркнута ценность операции автора для пластической реконструкции груди с трансплантацией соска. Подробно описаны оперативная техника и послеоперационный уход.

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Contributions to the Study of Extramedullary Plasmocytoma

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ALTHOUGH plasmocytomas of the osseous system are well known, those localized in other parts of the body such as the mucosa of the upper respiratory tract or the upper digestive system and organs, offer a peculiar interest, because of their rarity, as well as discussion about their origin. Jaeger found prior to 1941, only 20 cases in the available literature and added his five personal cases to these. Of these 25 cases, 20 were localized either in the upper respiratory tract or upper digestive tube. The other five were found in the thyroid gland, adrenal gland, jejunum, pleura and cecum respectively. Thus it is striking to see that the localization of tumors in the intestines is really rare; this makes the interest of three cases I have observed in our clinic (First Surgical Clinic of The Faculty of Medicine of Istanbul).

In my cases, the tumors seated respectively on the end portion of the ileum, on the cecum and on the nose. I am not competent to take part in the debate concerning the origin of the cells which compose these tumors. Jaeger came to this conclusion: "As these tumors are always localized on the mucosa and this membrane is richly furnished with lymphatic tissue, it is likely that the extramedullary plasmocytoma arise from the lymphatic plasmocells, while the plasmocytoma of the bones derive from the plasmocells of the osseus medulla. The sternal punction has confirmed this view for the last category."

Regarding the character of these tumors, it is to be suspected that some of them have a rather benign evolution while others are frankly malignant, can relapse and have metastases either in the regional lymphatic nodes or in distant organs. In my second case, the lymphatic nodes of the cecum were infiltrated and intimately adherent to the growth. The patient had a local relapse three months after the hemicolectomy.

In previously published cases, the age of the patients varied between 45 and 74. But my first case was a boy of 8; the second, 15. Therefore we see that plasmocytoma does not spare youth.

Now the observation of my cases:

Case I.—An eight year old boy entered the first surgical clinic of the Faculty in February 1942, because of a tumor located in the right side of the abdomen, of 6 months' duration. The boy was intelligent and told us that this tumor moved in his abdomen and occasioned pain from time to time. In the episodes of pain, he vomited. Bowel movements were normal. He had lost some weight. Physical examination revealed a tumor the size of a nut in the lower right side of the abdomen, movable and not dolorous. This growth gave the impression that it belonged to the cecum. There was no history of melena. Otherwise there was nothing significant in the clinical and laboratory examinations. X-ray examination could not be done.

Operation: Through a right paramedian incision, it was seen that the tumor belonged to the ileum just on the ileocecal valve. One could easily push the tumor through this valve in the cecum. There was no infiltration in the lymphatic nodes. Right hemicolectomy was done with ileotransversostomy, end to side.

Pathological examination (Prof. Schwartz): (Fig. 1) The small intestine just above the ileocecal valve is obstructed by a tumor of the size of a nut, located on the posterior

wall of the intestine. The appendix is remarkably long, thick and fixed with ancient adhesions.

Histologic examination (fig. 2a) shows atypical cellular elements with large nuclei containing much protoplasm. The dichromatin of the nuclei is mostly arranged in a spoke-like manner. However, eccentric localization of the nucleus in the middle of relatively large protoplasm is very frequent. The new growth is mostly necrotic.

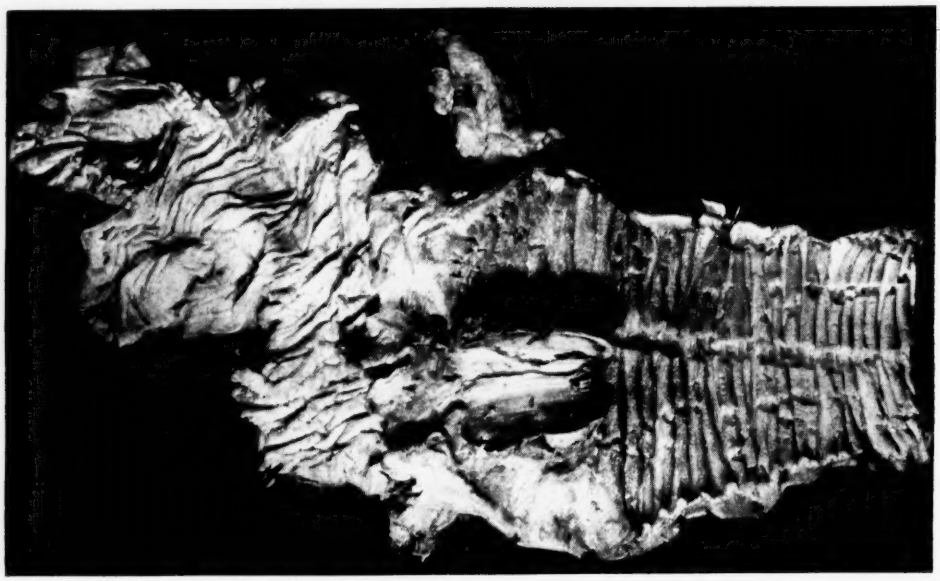

Fig. 1.—Tumor (plasmocytoma) on ileocecal border, *Case 1.*

Histologic diagnosis: Malignant tumor to plasmacells (plasmocytoma). The *Bence-Jones* test, performed after the pathologic examination, gave a negative reaction. Recovery was uneventful until the seventeenth day; on that day, the boy ate ½ kg. of figs. The next day typical symptoms of bowel obstruction appeared.

Operation: The small intestine was distended, hyperemic and adherent. It was impossible to discover the origin of the obstruction in this pile of intestine. A Witzel operation was performed and drainage instituted but the boy died the following day.

Autopsy revealed fresh suppurative peritonitis. There was no suture insufficiency on the level of the ileotransversostomy. There was a great amount of fig seeds all through the small intestine, which was distended and adherent. There was no alteration referrable to the plasmocytoma. The lymphatic nodes were not enlarged. Sections from several long bones, also from the columna vertebralis and sternum revealed neither metastases nor any particularity. It is likely that the boy died from the bowel obstruction due to consumption of such a great quantity of figs.

We see from this report that a plasmocytoma localized at the distal portion of the ileum did not cause metastases elsewhere in the organism. But the following case shows local relapse three months after operation:

Case II.—A 15 year old boy entered the clinic July 13, 1942. Three months before admission, he had felt pain in the lower right side of the abdomen. In the past two months he remarked in this side, a mass growing continually from day to day. He had had no significant previous illnesses. Physical examination showed a rather weak patient.

There was in the lower right side of the abdomen a mass with a rough surface the size of the head of the fetus which was slowly movable. During examination of the growth (which was painful) a rumbling was heard in the bowel.

X-Ray Examination: 8 to 10 hours after

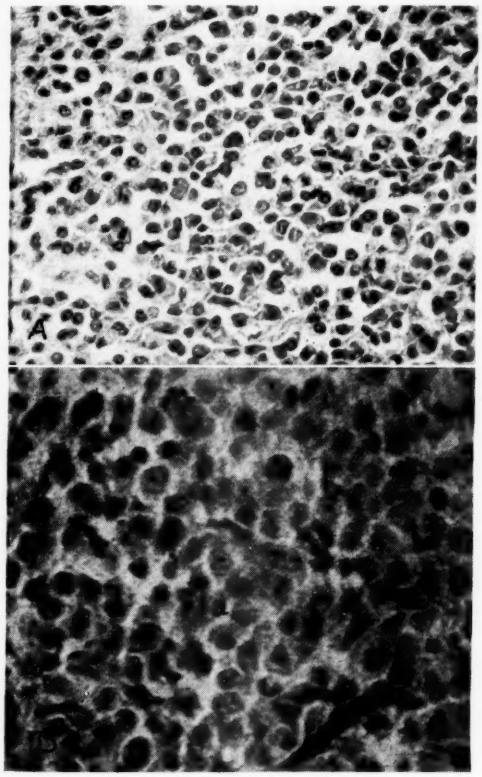

Fig. 2.—*A.* Infiltration with atypical plasmacells; characteristic nuclei and abundant protoplasm. *Nuclei* are eccentric. *B.* Typical appearance of plasmocytoma.

ingestion of barium, roentgenogram revealed a narrowing of the cecum.

Diagnosis: Cecal tumor, probably of a tuberculous nature.

Operation: The cecum and appendix were invaded by a growth of the size of a fetal head. In spite of close adhesions with the neighboring organs, the growth could be removed; right hemicolectomy was done with ileotransversostomy, end to side. The abdominal wall was closed without drainage. Recovery was uneventful and the patient left the clinic on the twelfth day.

Pathological Examination: (Prof. Ph.

Fig. 3.—Plasmocytoma of the nose, *Case 3.*

Schwartz) In the region of the cecum and appendix is a growth of two fist size, infiltrating the wall of the intestine. Several lymphatic nodes in this region are infiltrated and closely adherent to the growth. Microscopical examination shows several atypical plasmacells, with specific stains.

Histological diagnosis: Malignant plasmocytoma.

The patient came back three months after the operation for local relapse and pain in this region. He had lost weight and showed marked pallor. There was a mass in the lower right quadrant which was regular, firm and not movable. X-ray treatment was instituted, but the patient declined rapidly and the family took him home.

Case III.—A 35 year old man had a tumor of the nose. (Fig. 3.) Three months before admission he remarked difficulty in breathing through his nose. Slowly a tumor appeared through the left nostril which grew

(Continued on page 265)

Craniocerebral Injuries and the General Surgeon

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MOST writers on the subject admit that craniocerebral injuries are a common type of trauma. Mock has stated that nearly three hundred persons are killed by brain injury each day; Adson states that these injuries have become so numerous that no physician can escape their treatment. Few patients with a head injury are fortunate enough to come under the care of a neurosurgeon; it is therefore important that general surgeons everywhere acquaint themselves with the diagnosis and treatment of this type of injury.

In our hospital of 55 beds, we admitted 116 patients for some type of head injury during the five year period from 1939 to 1944. This does not include simple scalp lacerations or abrasions which were not included in the series. Those included either gave a history of unconsciousness or were admitted because an underlying brain injury was suspected or apparent.

In the 116 cases admitted to our hospital, 34 were treated for concussion, and gave no other signs of trauma; 49 were treated for concussion and had other injuries as well; 14 were treated for simple skull fracture, while seven had simple skull fracture together with other injuries. There were six cases of compound skull fracture.

The treatment of all these cases involved 1,721 hospital days, an average stay of 15 days per patient. 82 patients were discharged as improved, 21 as recovered; two were unimproved and signed a release. There were seven deaths in the series, four of which were associated with other severe trauma besides the head injury.

ANALYSIS OF DEATHS

Nature of Injuries	*No. of Cases*
Concussion with fracture of hip..	1
Concussion with fracture of pelvis	1
Concussion with fracture of cervical vertebrae	1
Simple skull fracture with fracture of cervical vertebrae.....	1
Skull fracture only	3
Total deaths	7

There were no deaths in the cases of compound skull fracture.

At the end of the five-year period, we sent questionnaires to all patients admitted to our hospital for head injury during that time. We received replies from 53 patients, the results of which were most interesting.

Fifteen patients complained of headache, while ten mentioned vertigo as a noticeable symptom. Twenty-six stated that they had no complaint of dizziness; six stated that tinnitus was a common complaint. From the results of this survey, we were stimulated to review some of the literature on this subject.

CONCUSSION

Literature on the subject of brain concussion is voluminous, but that on the subject of the pathology involved is meager. Most of the experimental work has been carried out on animals; this is to be expected in as much as most patients with concussion usually recover unless some other trauma or disease intervenes. In the ordinary case

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of simple concussion, no tissue is available for examination.

Boyd states that concussion manifests itself by a wide-spread and immediate loss of cerebral function following a blow on the head. The lesions found may vary from laceration of the brain to no lesion at all; they seem to bear no relationship to the clinical condition. Following a blow on the head, there is a momentary emptying of the cerebral vessels. When the vessels refill, the subsequent clinical course will depend on the concomitant lesion present. Some writers believe that concussion is a physiological state without a pathological background. Brown and Evans so classify it; the latter reserving the term "concussion" for those cases in which the loss of consciousness lasted only for minutes rather than hours.

Windle, Groat and Fox have shown by experiments on guinea pigs, that significant alterations in arrangement, shape and size of the Nissl bodies of the neurons were observable after concussion. The Nissl bodies of some of the cells appeared to be fragmented and disarranged by the blow. In other cells the particles gave the appearance of agglutination. In most of these experiments, nerve fibers and myelin sheaths appeared to have received little, if any damage.

Symonds states that concussion is obviously a diagnosis which can only be made in retrospect, that is to say, when after a momentary loss of consciousness, sufficient time has elapsed to show that there would be no sequelae.

COMPRESSION

The brain is so confined within the skull that pressure is a serious complication. No other organ is so easily affected by changes in pressure. Among the causes of pressure are edema, hemorrhage, abscess and tumor. Edema is the most important; Boyd states that traumatic cerebral edema occurs as a more or less serious complication in 95 per cent of all severe head injuries, whether or not there has been a fracture of the skull.

McGregor differentiates between concussion, minor and major contusion and laceration of the brain. He believes that a state of coma lasting for more than an hour implies something more than concussion, that is, actual brain damage.

SEVERE DEGREE OF BRAIN INJURY

These patients show no recovery of consciousness in from two to three hours after an accident. They are usually deeply unconscious when first seen by the physician. Symonds states that the mortality in these cases is about 20 per cent. Edema is usually found in the acutely injured brain and petechial hemorrhages are common. Necrosis often follows thrombosis of the smaller vessels. Atrophic changes may follow the injury and the brain may shrink. The resulting extensive gliosis may be associated with epileptic seizures.

SKULL FRACTURE

Simple skull fracture in itself may mean nothing unless it results in increased intracranial pressure or cerebral edema, which in turn causes pressure on the brain substance. A major degree of brain trauma may result if the fracture has opened the cranial cavity to potential infection, has compressed a cranial nerve, or lacerated a dural artery. Any alteration in the intracranial capacity by a depression of the cranial bones is likewise a serious type of trauma. It should be emphasized, however, that the term "skull fracture" should not be used

synonymously with craniocerebral injury. A simple linear fracture may involve no important structures and require no treatment. All head injuries, however, should be kept under close observation even though no active treatment is indicated. In the case of depressed or compound fractures, the gross pathology is more apparent. Even these cases may show few neurological signs if the fracture involves the silent areas of the brain. This holds for both simple fractures and depressed fractures in the silent areas. Fractures involving the ears and nose will sometimes decompress themselves. This was well illustrated in one of our cases. (See case 3.)

DIAGNOSIS AND TREATMENT OF CRANIOCEREBRAL TRAUMA

It has been the author's privilege to hear, on many occasions, the statement of Dr. John J. Moorhead of New York, "When the trauma is adequate, expect and suspect an adequate result." This is similar to a statement made by Mock, "Whenever a serious accident occurs and the resulting trauma seems trivial, treat that case as serious until proved otherwise."

The history of head injury is easily obtained in most cases. However, we occasionally find a case in which no history is obtained and in this a differential diagnosis must be made from diabetic coma, uremia, alcoholism and other medical conditions. All patients should first of all receive a complete physical examination. Bleeding from any of the orifices should be noted. Other signs of trauma should be looked for as it is a rare case that shows only head injury without other signs of trauma as well. It might be very embarrassing to treat a patient for concussion or a more severe type of head injury, and later to find that the patient has, say, a fractured hip which was not discovered at the time of admission to the hospital.

When the patient has recovered from shock, a complete neurological examination should be performed. Any pupillary changes should be noted and evidence of meningeal irritation should be determined. Drainage from the ears or nose should be recorded. Open wounds of the scalp should be palpated to determine the presence of a depressed fracture. A poor prognosis may usually be given if changes in the rate and character of respiration are noted. Cheyne-Stokes respiration and irregular or rapid respiration are important prognostic signs. A rising pulse, together with falling blood pressure, loss of sphincter control and increasing coma are all indications for a poor prognosis. The pupils may be pin point, dilated and fixed; the absence of corneal reflex is important. All of these findings should be checked repeatedly and any changes noted.

Spinal Puncture

Spinal puncture is done primarily for diagnosis. The appearance of the fluid, its pressure and the results of the Queckenstedt test should be noted. We do not believe in using spinal tap routinely unless it is indicated for diagnosis. Glazer, however, advocates routine spinal pressure studies and states that "A classification based upon the variations of intracranial pressure has proved more valuable for the treatment and proper interpretation of head injury patients than classifications based upon skull fracture or pathology."

Brieson states that spinal puncture should be performed for diagnosis in order to determine the appearance of the fluid, its pressure and the results of the Queckenstedt test. After this

has been accomplished, he believes the procedure should be abandoned. If there is a suspicion that the spinal fluid is blocked, drainage should not be performed.

Roentgen Examination

X-rays should be taken on all cases in which there is a history of unconsciousness or in any case where the history and physical examination suggest a diagnosis of possible skull fracture. If the patient shows signs of shock or if there are signs of restlessness and the patient is uncoöperative, x-rays should be deferred. In most cases of severe head injury, the patient should not be subjected to x-ray examination until the general condition has improved and the patient is able to cooperate. In many instances, the x-ray examination may be deferred from four to five days or longer.

Treatment of Shock

In any patient with head injury, the treatment of shock is of primary importance. The patient should be kept at absolute rest and bleeding controlled. If the bleeding has been profuse, transfusions may be necessary. Glucose may be given intravenously but examination should have been previously made to rule out diabetes. It is important to keep the patient warm. No operative procedure should be carried out until the patient has recovered from shock. H. F. Cameron states that every head injury should be considered as an individual case and treated as such. Schnitker advocates the use of plasma or 10 per cent glucose in physiologic saline solution in cases of severe shock, compound depressed skull fracture or in any case in which extra-dural hematoma is suspected.

After the patient has recovered from shock, a complete neurological examination should be carried out. Primary suture of any wounds may then be performed. The patient should be given tetanus antitoxin and sulphonamides as indicated. Narcotics should be definitely avoided; barbiturates or chloral should be used for sedation. Adequate bed rest with close observation by the attending surgeon and the avoidance of any radical treatment, will give best results.

Treatment of the Open Wound

The patient's head should be shaved and the wound debrided as soon as possible following recovery from shock. Mechanical cleansing and the use of green soap, followed by plenty of sterile water, is most important. Any surgical procedure should be done with the strictest aseptic technic. Local anesthesia is advocated by some authors, but we have had no experience with it. Ether is definitely contraindicated in any case of craniocerebral trauma. Pentothal sodium anesthesia intravenously is very efficient; we believe this to be the anesthetic of choice in these cases. All foreign matter should be removed from the wound. This is best done by adequate irrigation with warm normal saline solution. Any clots should be aspirated and all traumatized edges should be freshened.

Whether or not sulfa drugs should be used locally is a much-disputed question; many neurosurgeons are opposed to such a procedure. Lieutenant Commander Donald F. Coburn states that practically all of the head injury cases that came under his observation had some sulphonamide preparation used in the wound and in none of these individuals was there any evidence to suggest that the presence of the drug was in any way harmful. Most authors agree that if sulfa drugs are to be used locally,

sulphanilimide is the preparation of choice. Two of our own cases responded well to its use locally.

The dura should be closed with interrupted catgut sutures. The scalp is closed with dermal or silk worm sutures. If proper debridement has been carried

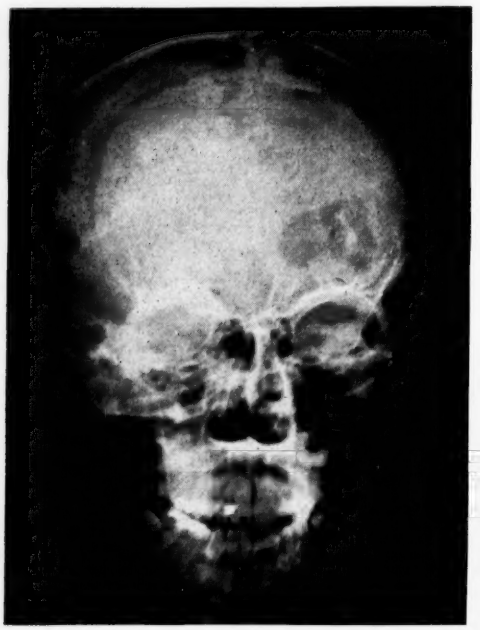

Fig. 1. *Case 1.* Compound skull fracture with defect in left frontal area.

out, no drainage will be necessary. Thorek states, however, that where there has been severe hemorrhage, it is a technical error to suture the wound without drainage. After dressings are applied, the patient may be returned to bed and shock treatment continued.

CASE REPORTS

We feel that the following cases are illustrative of those which the general surgeon may be called on to treat.

Case 1—C.D., male, age 19, entered the hospital Feb. 1, 1942, and was discharged on March 8. He stated that he fell asleep while driving and struck his head on a sharp object. He denied being unconscious. He walked about a half mile to a farm house and when first seen had his hand to his forehead and blood was running down from the hand. He was placed at rest and a physician called who took him immediately to the hospital.

Examination revealed a compound fracture of the right frontal area with bleeding from the nose. The pulse was 110 per minute; the blood pressure 130/70. The patient was drowsy but there was no sign of shock and no neurological signs were seen. The patient was taken immediately to the operating room and debridement carried out under Pentothal anesthesia, using aseptic precautions. The wound was cleaned with benzine, green soap and peroxide. The patient was draped and the wound explored. Six pieces of bone were removed from the

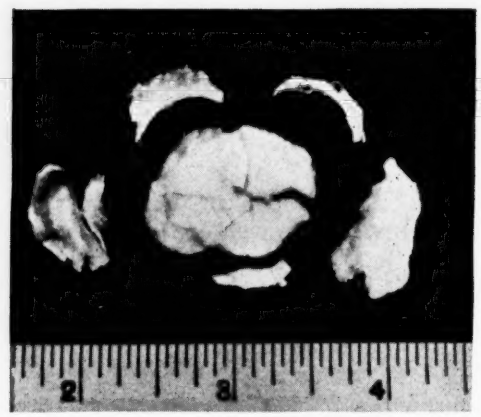

Fig. 2. (Same case as Fig. 1.) Fragments removed at debridement. No laceration of dura.

skull, the largest measuring about one inch (2.5 cm.) in diameter. (See Fig. 2.) The dura was not torn. After cleaning the dura with green soap and peroxide, followed with normal saline solution, powdered sulphanilimide was sprinkled throughout the wound, which was then closed with interrupted dermal sutures.

The patient was dehydrated with concentrated glucose. Phenobarbital grains ½, three

times a day, and chloral hydrate grains X (stat) were given. At no time did the patient's temperature go above 100.2° F. (rectal). The pulse varied between 80 and 90 per minute. Respirations ranged between 20 and 26 per minute. The blood pressure, which was checked at half-hour intervals for the first twenty-four hours, varied between 130/70 and 106/68. On the fourth postoperative day, the wound was clean and no evidence of infection was noted. At the time of discharge, five weeks after entering the hospital, the patient had no neurological signs and the wound had entirely healed. He was subsequently accepted for service in the Air Corps (ground crew).

Case 2—J.A., male, age 46, entered the hospital May 9, 1943 and was discharged July 6. The patient was brought into the hospital unconscious and was unable to give any account of the accident. His wife stated that he was brought home about 4 A.M. She thought he was asleep, but was awakened about 8 A.M. by his moaning. She then noticed blood about his head, and, being unable to rouse him, a doctor was called who ordered him to the hospital.

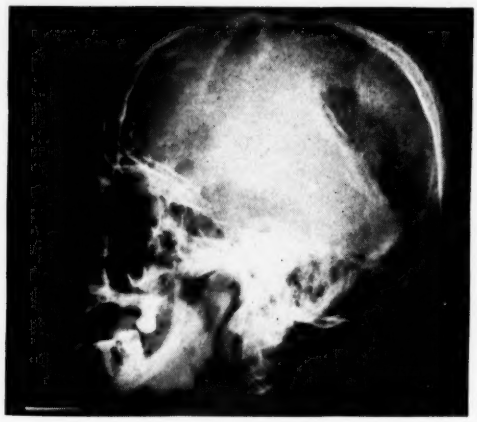

Fig. 3. *Case 2.* Compound skull fracture with laceration of brain. Bone defect in parieto-occipital area.

Examination revealed the patient to be unconscious. A laceration about 4½ inches (11.25 cm.) in length was noted over the left occipito-parietal region of the scalp. Palpation revealed evidence of a comminuted skull fracture. The left pupil was dilated and reflexes were even on both sides. The patient was entirely uncoöperative and disoriented. His temperature was 102° F. (rectal); the pulse 104 per minute. Respirations were 24 per minute. No cardiac irregularity was noted. The blood pressure was 118/72. A

Fig. 4. (Same case as Fig. 3.) Anterior-posterior view showing depression of fragments.

fracture of the neck of the right humerus was found.

A catheterized specimen of urine was obtained and found to be sugar free. The patient was given concentrated glucose (50 c.c.). One hour later the patient was taken to the operating room and the wound explored under Pentothal Sodium anesthesia. After a thorough cleansing with soap, peroxide and saline, six comminuted fragments were removed from the wound. A laceration of the brain was found and some of the lacerated brain tissue was excised. The dura was so torn that it could not be approximated over the brain. Powdered sulphanilimide was evenly distributed over the surface of

the wound and the scalp was approximated with interrupted dermal sutures. The right arm had previously been strapped to the chest with adhesive. A dressing was applied and the patient returned to bed in fair condition (figs. 3–5).

The patient was dehydrated with concentrated glucose intravenously. Chloral and phenobarbital were used for sedation. In spite of this, the patient was very restless for 60 hours, after which his condition began to show improvement. He became coöperative and began to take nourishment by mouth.

Fig. 5. (Same case as Figs. 3 and 4.) Fragments removed at debridement.

At no time did his temperature rise above 100.2° F. (rectal), and the pulse never rose above 110 per minute. Nine days after the patient entered the hospital, a Kirschner wire was inserted in the distal end of the fractured humerus and a Thomas splint applied.

Following this, recovery of the patient was rapid. The head wound healed with slight serous drainage. On June 30 a Scott splint was applied to the right arm. The patient was discharged from the hospital July 6. He was treated at home and in the doctor's office until he returned to work on September 17. The only resulting paresis was a slight involvement of the orbicularis oris muscle on the right side.

Case 3—A.P., male, age 47, entered the hospital October 29, 1944 and was discharged December 30. About 20 minutes before entering the hospital, the patient was knocked unconscious by a large stake that he had driven from a flat-car, and which flew through the air and struck him on the head. He was unconscious for about 15 minutes and was brought to the hospital immediately upon regaining consciousness.

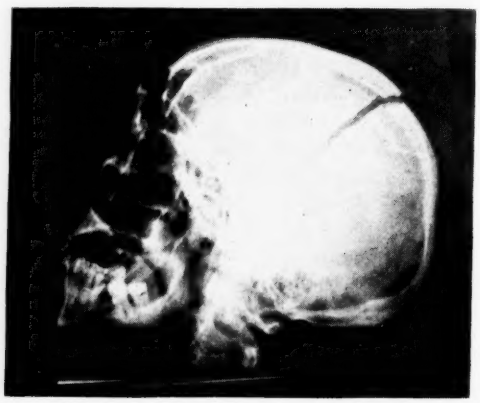

Fig. 6. *Case 3.* Compound skull fracture with decompression by bleeding through the left ear.

On examination, the patient was found to be semicomatose, disoriented and unable to answer any questions. Swelling was noted over both parietal areas of the skull. No crepitus was found. There was profuse bleeding from the left ear, but no other bleeding could be found. The pupils were equal. There was no rigidity of the neck and reflexes were equal on both sides.

A catheterized specimen of urine was found to be sugar free and the patient was given 50 c.c. of 50 per cent glucose intravenously daily for three days. No attempt was made to stop the sanguinous discharge from the ear, which was rather profuse for 48 hours. Chloral and phenobarbital were used for sedation. On the fourth day, the patient began to clear mentally and his condition improved from then on. Apparently the bleeding from the ear had decompressed the skull so that no radical treatment had to be undertaken. Seven days after entering the hospital, the patient was X-rayed. The results, as seen in Fig. 3, were surprising. Neurological examination at the present time

is negative except for a disturbance of smell and taste. This has shown improvement during the past two months (May, 1945) (figs. 6 and 7).

COMMENT

We believe that conservative treatment and constant observation will give the general surgeon best results in cases of craniocerebral trauma. Although each case is an individual problem, it is best to have a definite plan for the treatment of such cases. In the foregoing article we have described three of our cases which we believe present interesting problems.

RÉSUMÉ

La plupart des écrivains reconnaissent que les traumatismes cranio-cérébraux sont d'une grande fréquence, chaque jour, près de trois cents personnes sont tuées par des lésions de cette nature. Ces traumatismes sont d'un grand intérêt pour tout médecin.

L'auteur discute ces traumatismes et prescrit les traitements appropriées pour ces lesions. Il donne comme exemple 3 cas d'une grande fréquence.

RESUMEN

La mayoría de los autores aceptan que las heridas craneocerebrales constituyen un tipo muy corriente de traumatismo. Aproximadamente unas 300 personas mueren diariamente en los Estados Unidos como consecuencia de este tipo de lesión. Es natural que constituyan, por tanto, un tema de gran interés práctico para todo médico.

El autor estudia varios tipos de heridas de cabeza y expone ciertas reglas generales para su tratamiento; finalmente cita tres casos propios de esta naturaleza que considera típicos como ejemplos de los que con mayor frecuencia se suelen observar en la práctica diaria.

Свод

Большинство авторов признают, что черепно-мозговые повреждения являются очень частым типом траумы; около 300 человек убиты ежедневно в этой стране только этим типом траумы, что делает его практически важным для каждого врача. Автор описывает разные типы повреждений головы, дает общие правила ухода и цитирует 3 собственные случая, которые он считает наиболее типичными в ежедневной практике.

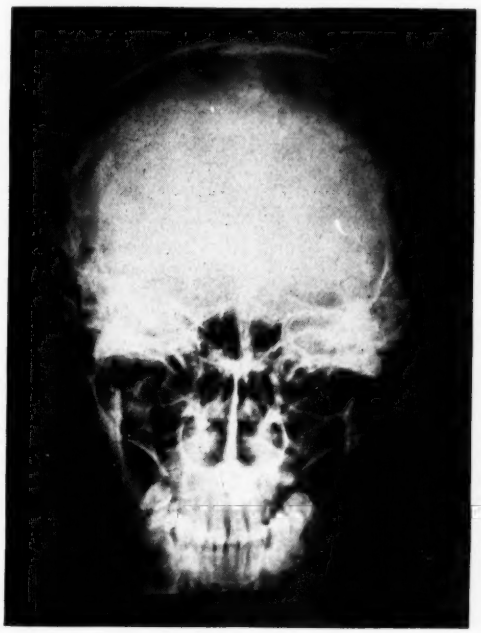

Fig. 7. (Same case as Fig. 6.) Conservative treatment even with slight depression of fragment (anterior-posterior view).

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2. Of 91 cases admitted with lesions of the stomach and duodenum, 12 (13 per cent) were treated surgically. The operations performed included ten gastric resections. There was no mortality.

3. Simplification of surgical technic is stressed. Methods are suggested which have decreased surgical morbidity and mortality.

RÉSUMÉ

L'auteur passe en revue son expérience de six mois en chirurgie d'estomac et du duodénum dans un hôpital de la marine. Quatre-vingt-i-onze cas présentant des lésions d'un ou de ces deux organes furent admis à l'hôpital; douze de ces cas furent traités chirurgicalement. Il y eut dix cas de résection gastrique. Il n'y eut aucun décès. L'auteur insîste pour la simplification de la technique chirurgicale. L'auteur suggère des méthodes qui diminuent la morbidité et la mortalité de la chirurgie gastrique et duodénale.

RESUMEN

En este artículo se pasa revista a los experimentos realizados sobre cirugía gastro-duodenal en un hospital naval. De los 91 casos admitidos con lesiones de dichas zonas, 12 (o sea al 13%) fueron tratados quirurgicamente. Las intervenciones realizadas incluían 10 resecciones gástricas. No hubo ningun caso de mortalidad. El autor, de acuerdo con su experiencia, recomienda ciertos métodos que han disminuido la morbilidad y mortalidad quirúrgica.

Свод

Сделан обзор шести месяцев хирургии желудка и двенадцатиперстной кишки во флотском госпитале. Поступило 91 больных с поражениями этих областей, 12 (13%) были оперированы, включая 10 желудочных резекций. Смертности не было. Подчерркивается упрощение оперативной техники. Указаны методы, уменьшающие, по мнению автора, хирургическую болезненность и смертность.

Perianal Suppuration

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I AM concerned to set forth in this article my views on perianal suppuration because I think that its exact pathology is not appreciated sufficiently widely. In the current text books, ischiorectal abscess is ascribed to a multitude of causes, which include pelvic suppuration, periurethral abscess, necrosis of the ischium and so forth. It is true that any of these conditions may set up an abscess in the ischiorectal fossa, but they do so only in a very small percentage of cases and in these instances the abscess is a *secondary* phenomenon. In my opinion a primary ischiorectal abscess comes from one cause and one cause only—infection through a minute tear in the mucous membrance of the anal canal. The tear occurs always at the same level, i.e., between the external and internal sphincters.

To understand why this should be so, it is necessary to refer to the anatomy of the part. This area is vulnerable because it is the level at which in the process of development the hind gut joined the proctodeum. It is represented in the adult by the valves of Ball at the bottom of the columns of Morgagni and by the anal papillae. The anal papillae are pale pennant shaped protrusions of mucous membrane, five to eight in number, which surround the bowel. They are the vestigial remnants of the septum, just as the carunculae myrtiformes are of the hymen. I am convinced that all primary perianal suppuration starts from an abrasion of one or other of these structures by a constipated motion, through which an infection by the streptococcus fecalis is enabled to make its way to surrounding tissues and, like other infections, *it follows the path of least resistance.*

The infection therefore usually travels first downwards between the skin and the external sphincter and then outwards into the loose areolar tissue of the ischiorectal fossa, where it forms an abscess. My own experience, which is contrary to the popularly accepted view, is that the path of infection only makes its way directly outwards between the two sphincters in quite a small percentage of cases (something under 15 per cent). But, whichever way it goes, in every case of ischiorectal abscess there is an internal opening which can be found by an expert. This opening may be missed even when it is looked for, even by one who is aware of this fact (a) because it is exceedingly small, often not larger than a pin's head, and (b) *because it is sought for too high up.* Occasionally the internal opening is large enough to allow the pus to escape through it and be discharged per rectum. This is the condition which is ill-named "a blind internal fistula."

If one is to treat an ischiorectal abscess successfully, it is essential to appreciate these details. It should be opened as soon as it is diagnosed or it will go on burrowing and with each day's delay the operation will become more difficult.

But how to incise it? In many textbooks, a cruciform incision in the ischiorectal fossa is advocated. I can never understand why. I can only suppose that this is a legacy from one of our forefathers in surgery which has been handed down through the centuries and copied from one textbook to another

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without critical consideration. Apart from its being a venerable tradition, it has nothing to commend it. The proper course is to make a pyriform incision over the abscess, the stalk of which is carried up to the internal opening, so that the whole area is exposed as in fig. 1. The skin included in the

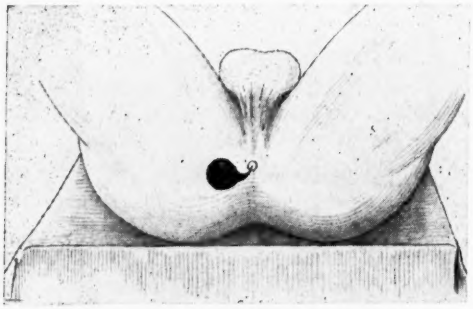

Fig. 1. Drainage of anischiorectal abscess. The stalk of the pear is the internal opening. Note the large area of skin which is excised.

lines of the incision must be excised. If the internal opening is not identified, a fistula will inevitably result. Occasionally, however, there is so much edema of the part that it is very difficult to follow the track of its origin. In this case, the abscess should be merely incised and drained. But it must be recognized that a second operation will be required for the resulting fistula as soon as the active inflammation has abated.

Sometimes the original infection travels from the internal opening directly upwards under the mucous membrane. When it does this it forms a submucous abscess. On rectal examination, an elongated elastic swelling can be felt extending up the wall of the anal canal and the lower part of the rectum for two or three inches (5 to 7.5 cm.) In shape, it resembles a length of ordinary lead pencil. When this submucous extension is present the internal opening *must* be identified. A director is passed up from the opening until its tip abuts against the blind extremity. The overlying mucous membrane is then

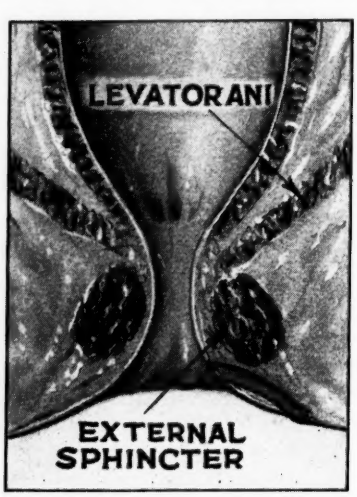

Fig. 2. Mucocutaneous fistula.

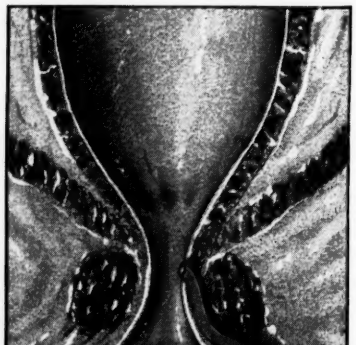

Fig. 3. The commonest variety of fistula-in-ano.

divided longitudinally. It may be very difficult to control the bleeding by ligature, especially at the upper end, and on more than one occasion I have had to send the patient back to bed with Spencer-Wells forceps left *in situ*.

I have dealt with the subject of ischiorectal abscess and submucous abscess in some detail because it has such an intimate connection with that of perianal fistula. There are only three varieties of perianal fistula, (a) marginal, (b) ischiorectal proper, and (c) pelvirectal.

(a) *Marginal fistula.*

This is a small track, subcutaneous in all its length, at the anal orifice. Both its openings are in the skin. It is the end result of a perianal hematoma (the so-called thrombosed external "pile," which is not a "pile" at all) which has discharged spontaneously at two places, as it sometimes does (fig. 2).

All that is necessary is to slit up the track, whereupon healing takes place in four or five days.

(b) *Ischiorectal fistula.*

This is, as I have described, the end result of an ischiorectal abscess which has (i) burst spontaneously or (ii) been opened without tracing it to its source. This state of affairs is shown in fig. 3.

The whole track must be laid open from one opening to the other; this can be done, as will be seen by reference to the diagram, without dividing the external sphincter. When performing this operation, surgeons are quite often under the impression that they have divided the sphincter, when in fact they have not done so. The misconception is due to the fact that the track is often much indurated and the thickened tissue is mistaken for the muscle itself.

Occasionally there exists a second internal opening some inches higher up than the first, a much more complicated state of affairs. This occurs when the original infection travelled in two directions simultaneously, (a) outwards into the ischiorectal fossa and (b) upwards under the mucous membrane to form a submucous abscess which opened spontaneously at its upper limit. This condition is shown in fig. 4. I call it the "fistula with high internal opening."

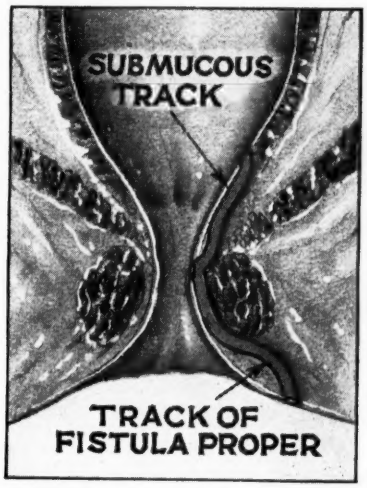

Fig. 4. The usual explanation of the fistula with a high internal opening.

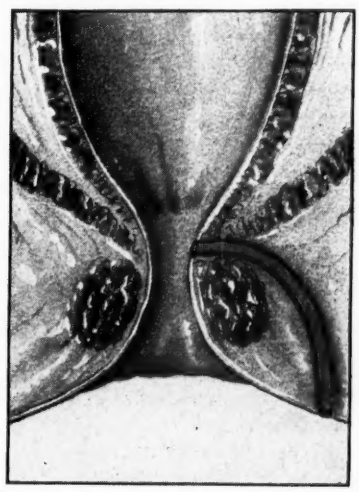

Fig. 5. This form of fistula is very rare.

In this case the operation should be done in two stages, preferably at the same sitting. First the lower track should be laid open as in the operation

for the condition shown in fig. 3, and then the mucous membrane divided over a director which has been passed from the low to the high internal opening, as in the operation for submucous abscess. It is of cardinal importance to recognize this condition when it is present and to realize that when there is a high internal

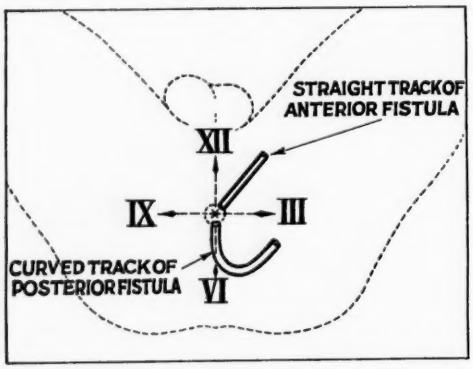

Fig. 6. The internal opening of fistulae in the lower half of the clock is invariably at 6 o'clock. In the upper half, the internal opening is always in a straight line between it and the hypothetical center of the anus.

opening *there is always a lower one as well.* Failure to appreciate this may lead to disastrous results. I have seen more than one case in which intractable incontinence has ensued from an operation at which a director had been forcibly pushed "across country" from the external opening to the high internal one and all the intervening tissue ruthlessly divided.

In the small percentage of cases in which the track runs between the two sphincters we have the state of affairs shown in fig. 5.

In this case it is obvious that, if the track is to be laid open thoroughly, the external sphincter must be divided. But here a word of caution is necessary. It is quite safe to divide the sphincter at right angles to its fibers, i.e., in a direction radiating from the center. The cut surfaces will unite and no harm will ensue. But if it is divided obliquely, the cut surfaces fall apart and partial or total incontinence may result.

It is therefore important to appreciate the relation of the track to the external sphincter. This muscle is not, as is commonly supposed, a complete ring. It is more in the nature of a horseshoe whose convexity looks forward and whose posterior ends decussate and are carried backwards to the coccyx. The mucous membrane is less well supported as it lies over the point of decussation than it is in the rest of the circumference of the anal canal; it is here, therefore, that it is most likely to be torn. This accounts for the facts that (i) a posterior fistula is more common than an anterior one, and (ii) that in the two cases there is a difference in the relationship of the external to the internal opening. It is most simply explained if we take an enlarged view of the anus in the lithotomy position and regard it as the face of a clock (fig. 6).

If the external opening is behind the 3 o'clock–9 o'clock line, the internal opening is invariably at 6 o'clock and the track starts by going directly backwards because this is the line of least resistance. It then pursues a curved course to the external opening. It is important to realize this because if one passed a director forcibly from one opening to the other, one would divide the sphincter obliquely. So I always look for the internal opening first, and if I do have to divide the sphincter I incise it directly backwards and then follow the track from that point to its external opening. In this way there is no danger of causing incontinence.

But if the external opening is anterior to the 3 o'clock–9 o'clock line, the internal opening is always in a straight line

between it and the hypothetical center of the anus (x in the diagram) and a director can be passed directly from one opening to the other and the included tissues divided without fear.

There is another difference between the fistula in front of the meridian and the fistula behind it. The anterior one has usually a single external opening but the posterior one may have many and may even extend across to the other side. Many fanciful names have been bestowed upon it according to the position of its openings (watering-can, butterfly, horseshoe fistula, etc.) but however many external openings there may be, the internal one is single and is always at 6 o'clock Of course, if there are multiple external openings, after dividing the sphincter backwards, each track must be followed and opened up in turn.

In every case the after treatment is the same. The wound should be lightly packed with gauze; and when I say lightly I mean *lightly.* This dressing comes away with the first motion for which I allow the patient to use a commode. Afterwards the gauze should be renewed daily to prevent the wound bridging over, as it has a tendency to do. But every day the packing should be smaller and lighter until the wound granulates.

(c) *Pelvirectal fistula.*

This is not primarily a rectal condition. The external opening is the external vent of a pelvic abscess of one sort or another which has made its way through the fibers of the levator ani (fig. 7).

It can be recognised with ease because (a) there is no internal opening and (b) a probe-pointed director can be passed up *parallel with the bowel,* sometimes as far as its whole length, to the alarm of the onlookers. The treatment is of course that of the primary condition. *No operation from below is of any value at all.*

A perianal fistula may be tuberculous in origin and much energy has been expended in trying to prove the exact percentage which is due to this cause. It is, in my own experience, quite a small one. A tuberculous fistula can be recognized with comparative ease because (a) the external opening is purplish and

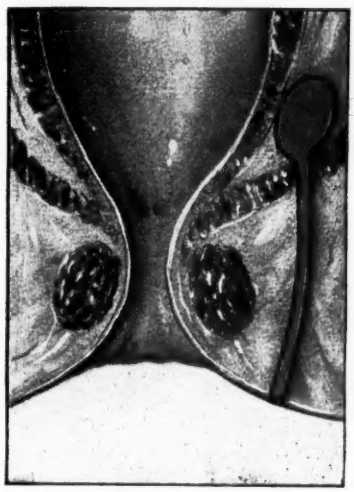

Fig. 7. Pelvirectal fistula.

unhealthy looking and (b) the internal opening is much larger than in an ordinary fistula, is less indurated and its edges irregular.

A tuberculous fistula-in-ano may have been caused by the swallowing of infected sputum. Therefore when a fistula is suspected of being tuberculous, the patient should be examined for pulmonary tuberculosis. If phthisis is present the rule is to *treat the patient and not the fistula,* unless it is causing him undue discomfort. If it does become necessary to operate, the rules which I have laid down for the ordinary types of fistula

are equally applicable for the tuberculous variety.

SUMMARY

The author points out how frequently errors of diagnosis are made with regard to perianal abscesses. After a brief review of the embryology of the area concerned, he describes what he believes to be the invariable true course and behavior of such lesions. He then gives a detailed account of his operative procedures for each of the several forms of the condition likely to be encountered.

In the final paragraph, he mentions tuberculous fistulae and proposes a method of treatment.

RÉSUMÉ

Les erreurs de diagnostic en fait d'abcès périnéaux sont fréquentes. Après une brève revue de l'embryologie de la region, il décrit un traitement des lésions de cette région. Il décrit les traitement appropriés de ces différentes conditions. A la fin de sa communication, il discute les fistules tubercúleuses et propose une méthode de traitement.

RESUMEN

El autor hace resaltar la frecuencia con que se cometen errores diagnósticos en relación con los abscesos perianales. Después de un análisis de la embriología de la región citada, se describe aquí lo que el autor estima como verdadero curso invariable y el comportamiento de tales lesiones. A continuación expone los detalles de su técnica operatoria para cada uno de los diferentes tipos de lesiones más frecuentes en la práctica. Finalmente, se mencionan las fístulas tuberculosas y se propone un método de tratamiento para ellas.

Свод

Автор указывает частоту ошибок в диагностике абсцессов промежности. После краткого обозрения эмбриологии этой области он описывает что, по его мнению, является непременным путем и поведением этих поражений. Затем он дает детальное описание оперативной техники каждой из нескольких найболее вероятных форм этой болезни. В заключение он упоминает туберкулезные свищи и предлагает способ лечения.

(Continued from page 187)

tions and chest radiography. Periodical mass radiography of groups of persons suspected of disease of the lungs, of contacts with open disease, of persons whose lungs are subjected to noxious fumes or dusts is a useful and beneficial accessory to medical examination.

Periodical mass radiography of groups such as the services, civil or military, the inmates of institutions will permit of the detection, segregation or exclusion of those with positive radiographic signs. Mass radiography of groups of civilians by one examination is essentially the initial stage of a research measure from which we may obtain more or less valuable information but it cannot be regarded as a material contribution in itself to preventive medicine.

Rebuilding Bony Depressions of the Face and Skull

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FRACTURES of the cranial bones, particularly in the frontal, zygomatic, nasal, chin, malar, and infraorbital areas, are more preponderant because of the increase of hazards in industry and military occupations. The correction of these contoural defects is essential mostly for cosmetic reasons since function is rarely impaired.

Failure to correct the fractures at the time of injury greatly lessens the possibility of repositioning these bones by refracturing and leverage. Replacement by graft tissue remains, then, as the only method of correcting old depressed fractures. The method of repair and the most suitable graft material must be given careful consideration.

Many alloplastic materials such as gutta percha, latex, vaseline, paraffin, gold, silver, lead, amber, aluminum, ivory, hard rubber, and animal bone have been used to fill old depressions of the face and skull. Recent experiments with the use of tantalum have been made. This last is beneficial, particularly where there is a good bed or covering of soft tissues. However, it is not advisable to place it directly under a thin covering of skin as would be necessary in many skull depressions. The reasons for the use of such substances are that they can be obtained in any size graft, molded without difficulty, easily sterilized, and their use eliminates surgery of other parts of the body. These alloplastic materials give immediate esthetic results, but since they do not become a part of the host tissue, they may produce inflammation and there is danger of eventual expulsion of the implant. These foreign substances maintain the temperature of the atmosphere; in zero weather, the foreign substance becomes extremely cold and the host tissue becomes blue. Likewise, in hot weather the host tissue becomes reddened. Due to the harmful sequelae resulting from the use of these implants, their application is not advisable. However, in cases where immediate protective repair is necessary and where the general condition of the patient does not permit long operations, cadaver cartilage or alloplastic materials may be used until more satisfactory repairs are permissible.

Dermal grafts, fat, and fascia lata are not suitable for filling in bony depressions. They *are* good for depressions resulting from the loss of soft tissue, as in building up lower lids and hollow cheeks due to absorption of buccal pads of fat. The sebaceous glands and hair follicles of the dermal graft are found to disappear completely and the graft remains as a part of the living organism.

Bone grafts are used where a rigid supporting structure is required and where a depression is too deep to be repaired by rib cartilage. However, it is not advisable to use split bone grafts where cartilage can be substituted. The bone is much more difficult to carve to the required shape.

Experimental evidence has proved that preserved cartilage shows an early reaction in the host tissue surrounding the implant and the formation of a thick connective tissue capsule for the duration of about one month. From that time until two years after implantation the sections show slow, gradual invasion of fibrous tissue and partial absorption, and in some cases, complete loss occurs

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leaving a scalloped effect. Preserved cartilage does not resist infection and necessitates an especially good bed with no tension on the wound. Implantations of pickled cartilage have given excellent results inasmuch as they were placed in the abdominal walls and had an excellent bed, but the beds over the nose and face are undoubtedly not as good as those in the abdominal walls. Because of these factors it is not satisfactory as a filling substance in the type of work under discussion.

Autogenous costal cartilage is the most satisfactory material for the repair of facial and skull defects. The removal of this cartilage is easily performed under local anesthesia. In all cases the patient is ambulatory in five days and has no postoperative complications. The graft, when tempered, retains its contour and is not subject to absorption. Because it is nourished by lymph, it takes readily, retains its normal structure and becomes a part of the living organism, attaching itself so firmly that it necessitates a chisel to separate it from its attachments. The technic for the correction of these depressions is as follows:

A mask is made of the face preoperatively. On this mask, a plaster of paris model for the cartilage transplant is made to conform to the defect. This model is sterilized and used as a guide in shaping the graft.

Local anesthesia is infiltrated into the superficial and deep tissues of the defect area. A pocket is prepared for the graft by incision and undermining the depression. If there is no preexisting scar over the defect area, the original incision should be made in the most inconspicuous place. In a frontal depression, the incision is best made in the eyebrow or in the scalp (fig. 1); for a malar depression, in the grooves formed at the junction of the auricle (fig. 2); for a chin depression, a semicircular incision under the margin of the chin (fig. 3); and for a saddle nose, an intranasal incision (fig. 4). Bleeding is controlled by packing and pressure. The recipient area is then covered with steril sponges.

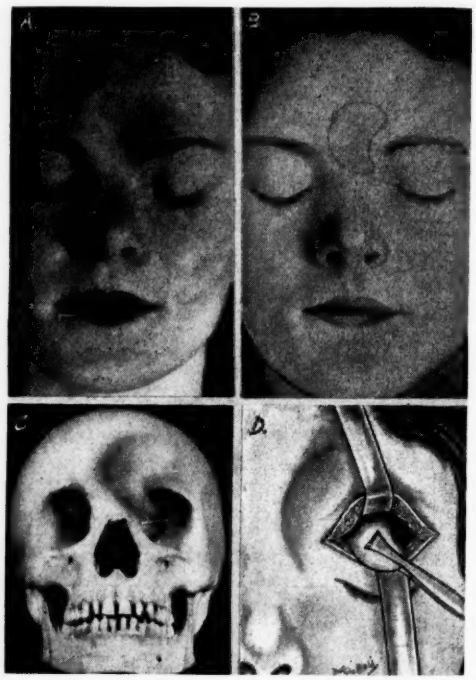

Fig. 1.—*A*. Depressed fracture of frontal bone, *B*. Corrected by costal cartilage graft, showing suture line and location of graft. *C*. Schematic diagram showing location of frontal bone depression. *D*. Introduction of shaped costal cartilage.

The necessary section of cartilage for the inlay graft is acquired as follows: Local anesthesia is infiltrated into the superficial and deep tissues at the chosen site for the rib resection. The cartilage is exposed through a vertical incision 10 cm. long and 5 cm. from the midsternal line, so that the middle of the incision is over the seventh costal cartilage. The incision is deepened to the rectus muscle, which is separated in the

direction of its fibers, and the seventh, eighth and ninth costal cartilages are exposed at their sternal junction. The model for the transplant is placed over the exposed cartilage and outlined with a knife on the perichondrium. By means of a raspatory, the perichondrium is undermined around and under the suf-

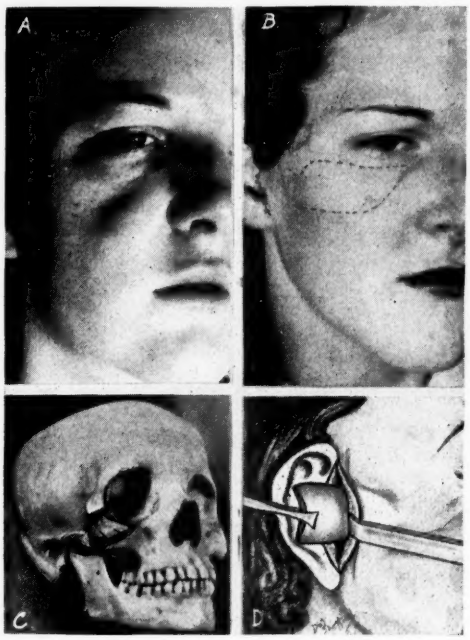

Fig. 2.—*A*. Depressed fracture of the malar and infraorbital area, *B*. Corrected by costal cartilage graft, showing suture line and location of graft. *C*. Schematic diagram showing fracture location. *D*. Introduction of cartilage graft.

face of the ribs for the desired distance. The ends of the cartilage are cut through with cartilage shears and a section of cartilage is removed. It is best to remove one large section of cartilage rather than several small pieces, as the former is easier to carve to the desired shape. All the sharp edges of the exposed ends of the cartilage are beveled. The severed vessels are clamped and ligated. The chest wound is closed in layers, dry gauze dressing applied, and strips of adhesive are placed firmly over the chest.

To shape the graft cartilage, the perichondrium is completely stripped and the preoperative model used as a guide in molding the cartilage. Where a sharp curve or angulation is desired in the graft, a section of the perichondrium should be retained on one side to act as a hinge. To retain the shape of the cartilage graft and to prevent distortion

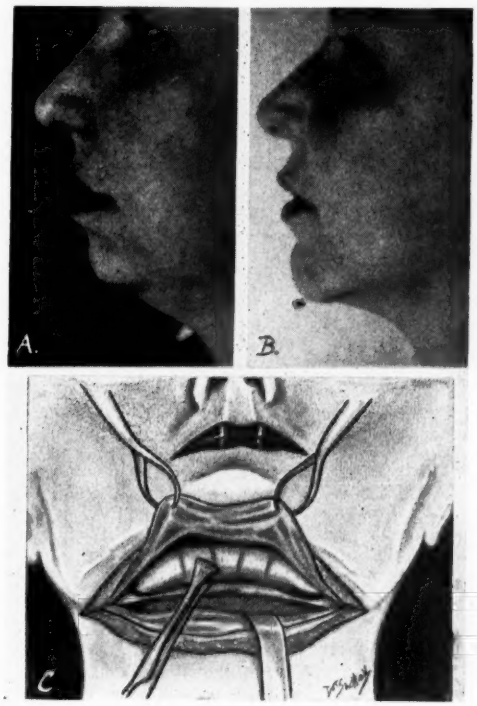

Fig. 3.—*A*. Receding chin, *B*. Corrected by costal cartilage graft. *C*. Perichondrial surface of costal cartilage graft is placed in contact with mandible. Grooves on outer margin produce natural curve. Graft is then immobilized by sutures passed through the margins of the periosteum of the bone.

and buckling, the graft cartilage is placed in a glass containing merthiolate solution. The glass is then placed in a beaker of water which is allowed to boil

for ten minutes. Upon removal from the beaker, the cartilage is immersed in cold, sterile, physiological solution of sodium chloride for fifteen minutes. It is then ready for insertion into the prepared pocket. A catgut suture is inserted at each extremity of the shaped cartilage. The graft is then inserted in the pocket and anchored by means of

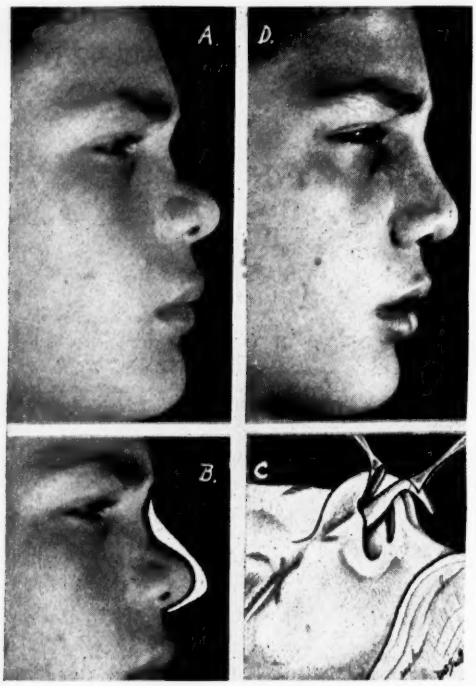

Fig. 4.—*A*. Traumatic saddle nose. *B*. Model for rib cartilage implant. *C*. Insertion of cartilage graft for dorsal and columellar support. *D*. Saddle nose reconstructed.

these sutures, to the periosteum of the defect area. The subcutaneous tissues are sutured with catgut and the margins closed with a subcuticular suture. The epidermis over the line of suture is scraped so that the scar is practically obliterated by the epithelization of the abraded surfaces. Mesh gauze covered with 5 per cent sulfathiazole ointment is placed over the abraded area and a pressure dressing is applied for immobilization.

CONCLUSIONS

Restoration of contoural facial and skull defects by cartilage inlays is of definite value where the defects are due to old depressed fractures, and where refracturing or repositioning the depressed bone is inadvisable or impossible due to loss of bone. Autogenous cartilage has been proven experimentally and clinically to be the best material for use in the repair of these depressions. It is readily obtainable, is easy to shape, retains its normal structure, is not subject to absorption, will not curl or buckle if properly treated, resists infection, and becomes part of the host tissues.

SUMMARY

The author states that rebuilding bony depressions in the face is usually needed for cosmetic rather than functional reasons. He discusses various materials and methods that have been tried, with his reasons for believing they are not as satisfactory as could be wished. He outlines in some detail his own method, which consists in shaping and inserting sections of costal cartilage through inconspicuously placed incisions, and shows how a minimum of scarring may be obtained.

RÉSUMÉ

L'auteur dit que la réconstruction des dépressions osseuses de la figure est indiquée généralement pour des raisons cosmétiques plutôt que pour des besions fonctionnels. Il discute les différentes méthodes employées et nous donne ses raisons pour lesquelles ils les croient insuffisantes. Il décrit la méthode qu'il

emploié cette méthode consiste à tailler des sections des cartilage costaux et en les insérant âpres modelage au moyen d'incisions plus ou moins cachées. Il obtient par sa méthode des cicatrices peu défigurantes.

RESUMEN

El autor hace constar que la reparación de las depresiones óseas en la cara se llevan a cabo, por lo general, con fines estéticos y no por motivos funcionales. Se discute en el presente trabajo diversos materiales y técnicas que han sido empleados al caso, afirmándose que no son todo lo satisfactorio que sería de desear. El autor describe su propio método que consiste en modelar, y luego insertar en sitio, secciones de cartílago costal, realizando para ello una incisión en unlugar poco visible de la cara para aumentar los resultados estéticos; se muestra en el artículo aquí resumido al mínimo de cicatriz resultante.

Свод

Автор заявляет, что перестройка костных впадин лица, обыкновенно, предпринимается по косметическим, а не функциональным причинам. Он обсуждает разные материалы и методы, примененные до сих пор, и дает свои поводы, заставляющие его думать, что они недостаточно удовлетворительны. Он подробно описывает свою методу, состоящую из формирования и введения секторов реберного хряща через разрезы, помещенные в незаметном месте, а также показывает, как обрести минимальный рубец.

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Cancer of the Larynx

Radiotherapeutic and Surgical Considerations*

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THE purpose of this communication is, first to present certain advances in irradiation of laryngeal cancer, and second, to discuss some surgical aspects with special reference to laryngectomy following irradiation.

The standard classification of laryngeal cancer recognizes two forms: intrinsic and extrinsic. The intrinsic group includes lesions originating in the ventricles, true cords and subglottic region. The extrinsic group includes lesions originating in the false cords, epiglottis, aryepiglottic folds and pyriform fossae. Lesions originating in the false cords are designated as intrinsic by some authors and as extrinsic by others. It has been suggested that the free border of the false cord should be considered as the dividing line. Actually, it is often difficult to determine the exact point of origin of a lesion, especially when the disease has become advanced. Generally speaking, laryngologists regard intrinsic lesions as being operable and extrinsic lesions as being inoperable. The presence of a metastasis to the cervical lymph chain is also regarded as a sign of inoperability by most laryngeal surgeons.

With rare exceptions, the histologic structure is that of epidermoid carcinoma. Lesions arising on the true cords are generally squamous in type, whereas those arising on the false cords, epiglottis, aryepiglottic folds and pyriform fossae are more frequently undifferentiated. Also, the undifferentiated elements are often mixed with squamous foci. Contrary to many statements in the literature, squamous carcinoma of the larynx is not radioresistant, providing that the disease is not deeply infiltrating and providing also that the irradiation is adequate (figs. 1 and 2).

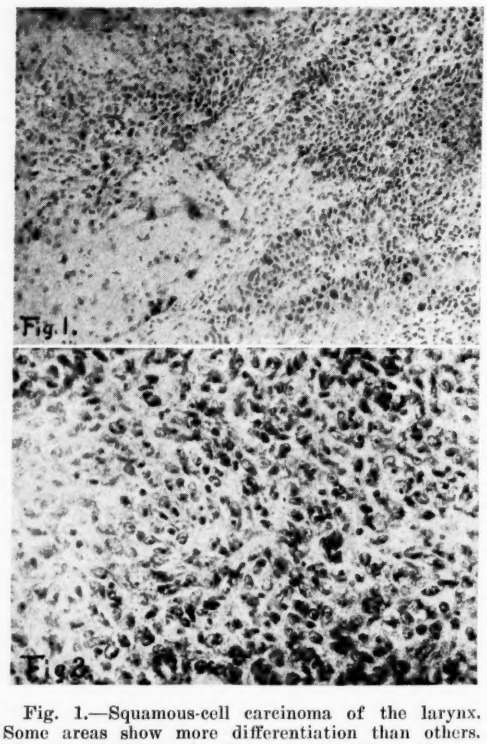


Fig. 1.—Squamous-cell carcinoma of the larynx. Some areas show more differentiation than others.
Fig. 2.—Undifferentiated type of epidermoid carcinoma of the larynx.

It is regrettable that, even though hoarseness is an early symptom in 95 per cent of the carcinomas arising on the true cord, *most* patients suffering

* Read at Tenth National Assembly, U. S. Chapter, Washington, D. C., Dec. 6, 7, 8, 1945.
† Fellow at the Chicago Tumor Institute.

from this disease still reach us in the late stages. Thus, out of 413 consecutive cases of cancer of the larynx reported by Cutler [6] only 88, or 20 per cent, were in the early stage. An analysis of our statistics indicates a delay of approximately nine months from the time that a patient develops hoarseness until a laryngeal examination is performed. An additional nine months elapses before treatment is begun. This delay of approximately 18 months accounts for the continued high mortality.

Important advances have been made in recent years in the effectiveness of X-ray and radium treatment of this disease. This progress has raised the important question as to the extent to which irradiation is justified in operable laryngeal cancer. When the lesion is limited to one vocal cord and has not reached the anterior or posterior commissure, it is curable by laryngofissure in approximately 80 to 85 per cent of the cases (Chevalier Jackson [10] reports 82 per cent, New [11] 83 per cent). Hence, one hesitates to abandon this valuable and standard procedure for new methods. At the same time, recent reports indicate that these lesions are also curable by adequate irradiation in about the *same* percentage, with the advantage that the voice is more nearly normal. This fact renders it desirable that cases for laryngofissure be selected with the greatest care and always with the knowledge of the recent results of irradiation for these early lesions.

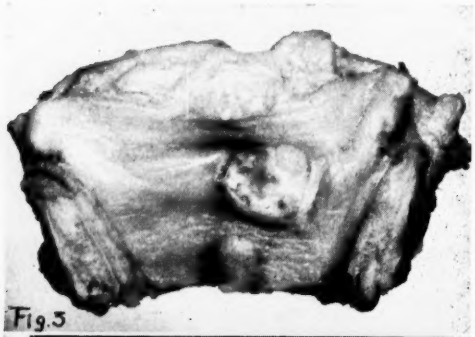
A more interesting group is that in which the choice must be made between irradiation and total laryngectomy; it is in this group that important advances have recently been made at the Chicago Tumor Institute. We have found that many lesions much too advanced for laryngofissure are curable by concentrated radiotherapy providing the structures are still not completely fixed by the tumor. It should be emphasized that when the structures are completely fixed by the neoplasm, laryngectomy is the procedure of choice. In this connection, it should be pointed out that fixation *may* be due to inflammation, especially following one or more biopsies, but usually indicates deep infiltration by the tumor.

It often occurs that the lesion is of borderline operability, or that the patient refuses total laryngectomy, or that he desires to be treated by radiation, provided that a laryngectomy can be performed if the radiation is not successful. The question then arises as to whether laryngectomy can be performed with safety following a course of irradiation. This question has been answered in the affirmative by various authors, namely: Brunschwig of the University of Chicago,[4, 5] Bernheimer of Chicago,[1] Lenz of Columbia University,[9] Figi of the Mayo Clinic [8] and Cutler of Chicago.[7]

Microscopic studies by Borak,[2] Wolbach [12] and Brighton [3] of irradiated tissues reveal that the changes produced by irradiation are fibrosis and thickening of the small blood vessels, with varying degrees of degenerative changes in the muscle due to interference with circulation. It is reasonable to assume that with improvements in the technique of the administration of radiation, particularly with the use of small fields, these alterations in the normal tissues can be reduced to a minimum.

I have made an analysis of eleven patients who have been subjected to total laryngectomy from three to forty-six months after radiotherapy. All of them received heavy doses of X-ray or radium or both. In all but two cases, the patients were treated on both sides of the neck. In nine cases, laryngectomy was performed for uncontrolled or recurrent disease and in two cases for radio-

necrosis. Ages of the patients ranged from 38 to 62 years. Six were over 50 and one was over 60 years of age. All but one patient were subjected to total laryngectomy and one to panlaryngectomy. Most of the patients were operated upon by Dr. L. B. Bernheimer. The interval between irradiation and operation was as follows: four cases within six months, two cases within one year, three cases within two years, and two cases after two years. In all but one case, the lesion originated in the true cord with extension to the false cord and other structures. In the one case, the lesion was very extensive, requiring radical panlaryngectomy; this case is free of disease after one year. There were no operative deaths. Two patients, or 18 per cent, are free of disease five years after operation. Eight, or 73 per cent, are free of disease after from six to twelve months. One patient is alive but probably has a recurrence (figs. 3 and 4).



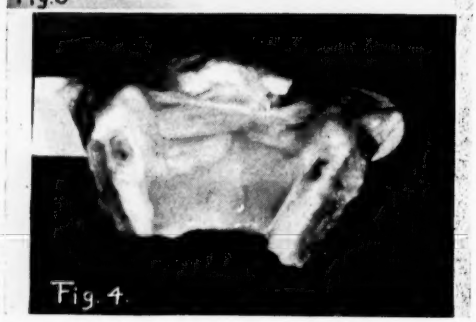


Fig. 3.—Laryngectomized specimen 3 months after a cycle of 5,550 roentgen units of x-rays, showing uncontrolled disease of the right true and false vocal cords. Fig. 4.—Surgical specimen showing recurrent disease of the left true vocal cord, false vocal cord and ventricle. Laryngectomy was performed after a cycle of 78,000 mgm hrs. (Radium Pack) and 6,600 roentgen units of x-rays.

No formidable difficulties were experienced at operation as a result of irradiation. It has been noted, however, that the bleeding was slightly more marked, that cleavage planes were masked and the tendency to heal somewhat delayed. The wounds frequently did not heal by primary intention, but even in *non*-irradiated cases a pharyngeal fistula is a common complication following laryngectomy. The conclusion can be drawn that there is no significant operative or postoperative contraindication to laryngectomy after irradiation.

SUMMARY AND CONCLUSIONS

1. Radiotherapy is an increasingly important method of treatment for cancer of the larynx.
2. Under special conditions irradiation is preferable to laryngectomy.
3. Early lesions of the true cord suitable to laryngofissure are curable either by surgery or irradiation in about the same percentage of cases.
4. Irradiation is not a contraindication to subsequent total laryngectomy.

SOMMAIRE

D'après ses observations au Chicago Tumour Institute, l'auteur est d'avis que la roentgen-thérapie est d'une importance grandissante dans le traitement du cancer du larynx. Sous certaines conditions, il est préférable à la laryngectomie. À la premiére péri-

(Continued on page 281)

Exstrophy of the Ileum Through a Patent Omphalomesenteric Duct With Strangulated Umbilical Hernia

Case Report

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A NICE problem of diagnostic discernment and therapeutic judgment is associated with the umbilical region in infancy. Simple excess granulation tissue, polyps or polypoid formations, cysts, diverticula, tumors, remnants of the omphalomesenteric duct, fistula, patent duct, prolapse of the bowel through a slit in the wall of the cord or through a patent duct, or hernia may be seen, singly or as correlated conditions by pediatricians or surgeons.

An extremely interesting example of congenital anomaly at the umbilicus recently came under my care for emergency surgery. The patient was a baby boy with a sausage-shaped mass lying on the abdominal wall. It was covered with mucosa and dark in color, due to strangulation at the umbilicus. The history of the case began with what seemed to be a simple excess of granulation tissue which was removed by cautery. A fecal fistula followed which failed to close under conservative treatment. Next, a mucosal bud appeared in the opening. Sterile dressing was reapplied, but the following morning examination revealed that a dramatic situation had developed, best described in the title of this article.

Cullen's book [1] on the "Umbilicus and Its Diseases" (1916), discusses each anomaly and disease very fully, each condition being seen against a very complete background of embryologic growth and development, together with a very adequate description and illustration of the normal anatomy of the region.

A comparable background for the rather rare anomaly to be discussed here cannot be given within the limits of this article, hence the reader is referred to the comprehensive study in Cullen's text with selected illustrations, case histories, and drawings.

It may be pointed out that it is a rather common practice to use the cautery for removal of granulation tissue and polypoid formations about the umbilicus, and that Cullen suggests the use of the cautery to effect a closure in cases of patent omphalomesenteric duct. He says: "The most satisfactory results have been obtained from the use of caustics or the actual cautery, or from the application of a ligature to the umbilical growth." Cullen goes on to cite instances in which intestinal obstruction occurred as a later complication and concludes that removal of the umbilicus and the fistulous tract gives best permanent results.

The compilation of cases of patent omphalomesenteric duct, untreated, treated conservatively, or treated radically, analyzed by Morgan (1942), points definitely to the same conclusion.

Morgan,[2] tabulating the cases in Cullen's text and adding others down to his own case in 1942, states that, in all, there were 105 cases of persistent patent omphalomesenteric duct. A few were included which were found only

at autopsy on premature infants. In nineteen cases treated conservatively or by ligature or caustics, healing occurred in 17, no healing in one and death in one (conservative treatment). In a tabulation of 42 cases treated by radical resection, recovery occurred in all but five. Morgan's case is one of fecal fistula. When the cord sloughed off on the ninth day, a small butt of what was considered granulation tissue presented at the navel. After leaving the hospital, the mother reported a fecal discharge. At the apex of the bud, a small opening gave entrance to a probe downward and to the right for a distance of 3½ cm. The bud was seen slowly to protrude and stand, erect and tense, about 1 cm. above the navel; then it would gradually recede, until drawn inward, giving the navel a practically normal appearance. Such changes were thought to be due to peristalsis. The condition was explained to the parents and watchful waiting was continued until the boy was one year old, no untoward incident having occurred. During this period of waiting, the treatment was solely in the interest of cleanliness and the avoidance of skin irritation. At operation, the fistulous tract was completely removed and recovery was uneventful.

Cases of prolapse through the fistulous tract are reported very infrequently; it occurred in 26 of the cases reviewed by Morgan. These cases are presented in a separate table and the outcome is quite different in these cases. Obstruction of the intestine in infancy and damage to the delicate tissues of the prolapsed bowel, due to strangulation at the umbilicus, calls for immediate operation under conditions greatly increasing the mortality rate. Twelve cases were operated upon with doubtful recovery reported in only one case in the tabulation. The text refers to three operative recoveries, the doubtful one being one of Cutler's, in which the baby recovered from the operation but died of erysipelas and pneumonia while still in the hospital. The other two cases of recovery are those reported by Ott and Cooper. To clear up this point, the original articles were consulted in the twelve operated cases and brief abstracts are given in the following, in chronological order:

1 Kobling (1843). Boy, 19 weeks old. Prolapse of red distended intestine. Operated at once. Death in 13 hours.

2 Weinlechner (1874). Child 5 months old. Prolapse, left horn 4 cm. long; right 11 cm. long. Tumor cut off, leaving a short stump and two lumena. Death 30 hours later.

3 Huttenbrenner (1878). Boy, 5 months old. Prolapse of 9 inches of bowel. Removal. Death due to pneumonia.

4 Helweg (1884). Boy, 4 months old. "Tumor" at the umbilicus was tied off and became necrotic. After violent coughing, prolapse of intestine occurred, attached by a pedicle to the umbilicus. Reduction by traction. Closure of the bowel. Death in a few hours.

5 Barth (1887). Boy over two weeks old. Attempted reduction of prolapse. Bowel accidentally torn. Repaired. Reduction accomplished. Death on third postoperative day.

6 Lowenstein (1894). Boy 3 months old. Prolapse of 5 cm. of bowel. Abdominal incision, reduction. Open omphalomesenteric duct tied off. Death 24 hours later.

7 Ophuls (1895). Boy, 3 weeks old. Operation for prolapse of 10 to 15 cm. of bowel through an open Meckel's diverticulum. Reduction. Removal of diverticulum. Intestinal suture did not hold. Peritonitis and death.

8 Arndt (1896). Boy, 16 days old. Operative reduction. Peritonitis due to failure of sutures to hold properly. Death.

9 Cooper (1918). Extroversion of bowel

through an umbilical fecal fistula, due to a patent Meckel's diverticulum. Thick umbilical cord noted. Thick, solid, ugly-looking projection remained. Assisted in its removal with scissors. Encountered intestinal musoca. Discharge of feces from the umbilicus. Cotton-wool dressing and binder. Seven months later, child cried and strained and 6 inches of bowel shot out, turned inside out. Attempts to reduce under chloroform failed. Taken to hospital and operated the same night. Death few hours after operation, the nature of which is not given.

10 Crymble (1921).* Boy, 5 months old. Projecting mass at umbilicus. Persistent vitelline duct attached to the vermiform appendix. The projecting mass was the prolapsed part of the duct. The appendix was divided at its base and the vitelline duct was thus removed. Uninterrupted recovery.

11 Cutler (1924). Baby, 4 hours old. Prolapse of Meckel's diverticulum on the side of the umbilical cord. Mass size of an egg. Coils of small bowel seen through walls of cord, with mucous membrane on the outside. Impossible to reduce. Incision into sac or dilated cord and loops pushed back into abdomen. Diverticulum resected. No temperature. Feeding well and gaining weight. Facial erysipelas and bronchopneumonia. Death. Autopsy revealed abdominal condition healed and functioning normally.

12 Ott (1929).* Child, 4 months old with intestinal fistula at the umbilicus. Incision 3 cm. above and 2 cm. below the umbilicus. The peritoneum was entered and the loop of small bowel was brought out on which was implanted the diverticulum. A portion of the diverticulum had remained interperitoneal for a distance of 2 cm. Resection of the diverticulum .5 cm from the point of implantation. Stump invaginated. Reduction of the loop of intestine. Abdomen closed. Severe mechanical ileum after operation, due certainly to the reduction of the intestinal lumen by burying the cone and to the sero-serosal sutures in the very delicate intestine. Discharge from the hospital on the sixth day.

From the reports of experiences such as are recorded by Cullen and Morgan, and from the case here to be reported, practical conclusions are to be drawn. The cautery must be used with discretion in the umbilical region in infancy. A distinction must be made among granulation issue, polyps and mucosal protrusions. In the removal of granulation tissue, a simple procedure in itself, one must keep in mind the possibility of the presence of a patent omphalomesenteric duct. The number of instances in which such a duct has been entered by the use of caustics or the cautery may be greater than the review of the literature indicates. If such a fistula occurs and conservative treatment is decided upon because of the condition of the infant or in the hope of postponing operation until the infant is older, the condition must be fully explained to the parents and every effort must be made to prevent untoward incidents. Prolapse of the bowel through an opening at the umbilicus occurs in only a small number of the cases, as we have seen. Due to this fact, watchful waiting has much in its favor, but when one is confronted by exstrophy and strangulation, there is no other choice than immediate operative removal.

CASE REPORT

Boy, 5 weeks old. History shows normal birth; weight at birth 8 lbs., 13 oz. Family history was essentially negative.

At the age of 3½ weeks, the child showed some signs of developing an umbilical hernia. The mother called attention to the fact that there was not proper healing. On examination, an excess of granulation

* *Note:* Cases of Crymble and Ott are listed in Morgan's table as deaths.

tissue was noted (fig. 1); this was cauterized by electrodesiccation.

A week later, the child was referred to me for examination. The excess granulation tissue was no longer present, but there was a yellow exudate from the area which resembled the stool of a breast fed infant. Adhesive strapping was applied. After a few days when the dressing was removed, careful examination revealed an opening in the umbilicus with mucosa presenting. An ileostomy had been formed. Surgery did not seem indicated at this time. A sulfathiazole dressing was applied and the umbilicus was restrapped. The following morning, the bowel became exteriorized, producing a tumor mass on the abdominal wall, five inches (12.5 cm.) across. My associate made a diagnosis of strangulated hernia, applied a powdered sulfathiazole dressing and hospitalized the infant.

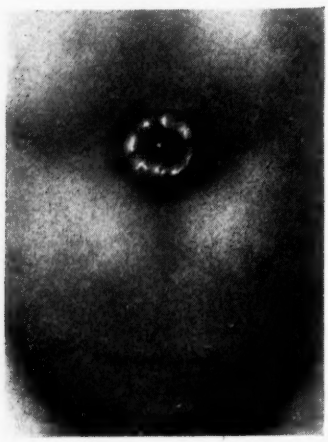

Fig. 1. Umbilicus showing closed omphalomesenteric duct which appeared like granuloma before cautery.

Immediate operation was performed under cyclopropane anesthesia. A "T"-shaped loop of bowel, five inches (12.5 cm.) across, blind at both ends, protruded from the abdominal wall. Through the opening at the umbilicus, an inversion intussusception had occurred. Instead of the expected serosa, the "T"-shaped mass was covered with mucosa, dark in color due to strangulation at the umbilicus. More readily to understand the surgical, pathological anatomy, reference may be made to the accompanying diagram (fig. 2).

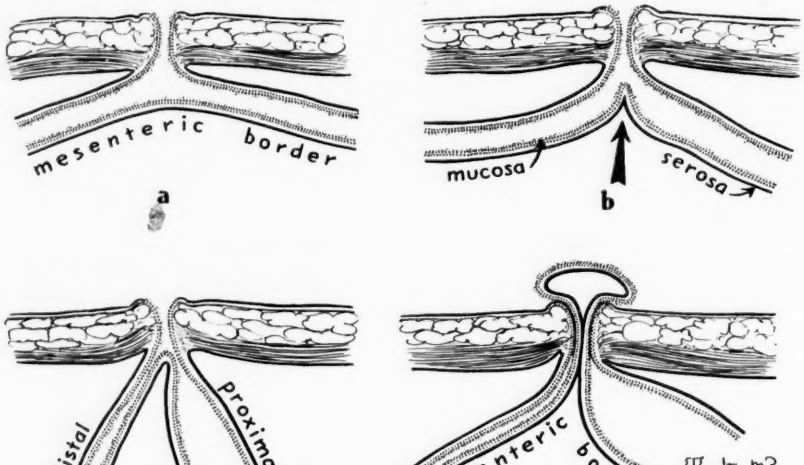

Fig. 2. Diagrams showing progressive stages of inversion intussesception with final exstrophy of ileum and strangulation.

Operation: Lateral incisions were made

through the skin, fascia and peritoneum to relieve the strangulation. The inversion intussusception was reduced. The bowel, tested for viability, was in fairly good condition. The opening into the ileum, probably from a artificial respiration and coramine. Postoperative condition was only fair. Nevertheless, in the first days following the operation, the child took nourishment well, his appetite was good and his elimination normal. On the

Fig. 3. Appearance at time of operation—"T"-shaped loop of bowel—blind at both ends—covered with mucosa.

Fig. 4. Cross section of No. 3, showing inversion of ileum, strangulation, dilatation of proximal loop.

previous Meckel's diverticulum, was repaired in the usual manner, using interrupted, atraumatic suture for the mucosa and serosa. The hernial opening was repaired with chromic 1 for peritoneum and transversalis fascia, interrupted, overlapping chromic 1 for the fascia. Interrupted silk was used for the skin.

The child was given a blood transfusion. During the operation he stopped breathing twice, but was resuscitated with oxygen, sixth day, there was some distention and Wangensteen suction was started. As other untoward symptoms appeared, such as rapid respiration, failure to retain feedings, muscular twitching, carpopedal spasm and convulsions, proper therapy was promptly instituted, including oxygen, repeated blood transfusions, gastric and rectal suction, calcium gluconate intramuscularly and saline subcutaneously. On the fifteenth postoperative day after repeated spasms, the child expired in a convulsion.

SUMMARY

A case is recorded of exstrophy or prolapse of the bowel at the umbilicus in an infant, being the twenty-seventh in a series of reported cases, the last previous case having been recorded in 1929. In a large number of cases of patent omphalomesenteric duct, there is no tendency of the bowel to prolapse. This fact raises the question of when to follow a conservative course and when to operate in these cases. Failure to recognize the true nature of protrusions at the umbilicus has occurred and attention is called to resultant errors in treatment.

RÉSUMÉ

Un cas est rapporté d'extrophie et de prolapsus de l'intestin à l'ombilic d'un enfant. C'est le 27ième cas à paraître dans la littérature. Dans un grand nombre de cas de conduit omphalomésentique ouvert, il y a une tendance à prolapsus de l'intestin. Quand faut-il soumettre le malade à un traitement conservatif? Quand faut-il opérer? La vraie nâture des protrusions à l'ombilic est souvent mécanue et peut entraîner l'emploi d'un traitement erronés.

RESUMEN

Se presenta aquí un caso de prolapso intestimal en el ombligo en un infante, constituyendo el caso número 27 de una serie ya descrita, en la cual el último caso fué publicado en 1929. En un gran número de casos de conducto onfalomesentérico patente, no existe tendencia al prolapso intestinal, lo cual plantea el problema de si se debe adoptar un procedimiento conservador u obtar por la intervención quirúrgica. En ocasiones no se es capaz de determinar la verdadera naturaleza de las protusiones umbilicales y a este respecto el autor llama la atención sobre los errores resultantes de tratamiento.

Свод

Доложен случай екстрофии или пролапса кишечника около пупка у младенца. Это 27-ой в серии доложенных случаев, последний будучи доложен в 1929 году. В большем количестве случаев открытого омфало-мезентеричного канала существует наклонность к пролапсу кишечника. Этот факт ставит вопрос о том, когда прибегнуть к консервативному курсу, а когда оперировать. Обращается внимание на то, что настоящая причина выпуклости у пупка иногда не распознается, и результатом является ошибочный способ лечения.

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Ecchymotic Mask

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IN 1837, a French physician, Ollivier (d'Angers),[80] under the name "Masque Ecchymotique," described a condition produced after trauma and pressure on the chest and abdomen. It is characterized by a blue cyanotic discoloration of the skin of the face and neck. Later German physicians reported the same condition under the name "Druckstauung" (Perthes, 1900),[86] or "Staungsbluttungen" (Braun 1900).[21] English and American authors gave it the name of "Traumatic Cyanosis," or "Traumatic Asphyxia." But this designation is too limited, as this condition may appear without trauma, as we shall see later.

HISTORICAL

Ollivier[80] was the first to describe it after he had seen a very large number of cases which occurred "during the skirmish which took place at the Champ-de-Mars on the 14th of June 1837, when 23 persons were suffocated by the mob . . . Ollivier (d'Angers), entrusted with the post-mortem examination of the bodies, read a report to the Academie de Paris on the 20th of June 1837" (Lejars).[66]

"In 1855, Tardieu, studying death by suffocation, related an accident which occurred in a women's workshop where, during a panic, the unfortunate people presented bloody infiltrations of the conjunctiva and palpebra or punctuate ecchymosis on the face, neck and chest. . . .†

"In 1866 Tardieu[114] again published a medico-legal study on the 'accident which happened on the Pont de la Concorde in Paris on the 15th of August 1866' where the victims presented ecchymotic discoloration of the face, neck and upper chest." Further described were the . . . Vienna Ring Theatre fire, December 8, 1881, with nearly 1,000 fatalities; the panic at Victoria Hall, Sunderland, June 16, 1883, where nearly 200 children rushed into a closed corridor and were asphyxiated by crushing . . . and most recently at the Charity Bazaar fire in Paris, May 4, 1897." (Burrel and Crandon).[24]

Perthes[84] in 1899, reports two cases, and one case in 1900.

Braun[19] from 1899–1904 reports 4 cases.

Wieniecke[121] in 1905 collected 21 cases from the literature. In the same year, Milner[71] collected 26 cases.

Mauclaire and Burnier[70] in 1909 collected 58 cases.

"Heuer[50] in 1923, collected 127 cases including his own" (Laird and Borman).[61]

In 1930, Laird and Borman[61] added 18 cases to this number, including their own.

INCIDENCE

This condition is quite a rare one. Since the first report on it by Ollivier in 1837,[80] and until the publication on the subject, of a paper by Laird and Borman in 1930, only 138 cases have been reported. In other words, approximately one case a year was reported. Relative to the number of patients, Laird and Borman "observed 5 cases in the past 2½ years in a series of over 32,000 hospital and clinic patients in an

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† My thanks are extended to Prof. F. Mandl for his encouragement and to Dr. N. Hamzeh, M.O., i/c Government Hospital, Haifa, for his kind permission to publish this case.

industrial field'' (one case in every 6,000). ''Out of approximately 75,000 major accident cases only 2 of traumatic asphyxia have been seen.'' (One case in 37,500). In our experience we had one case out of over 18,500 hospital and accident cases, in an industrial area where there was considerable military traffic. Laird and Borman [61] collected 143 reported cases including their own. To this number must be added the 3 cases of Cathala (1933)[25] and our own case, making a total of 147 cases, plus 23 collected from the literature from 1933 until 1944, making a grand total of 170 cases.

ETIOLOGY

The ''Ecchymotic Mask'' is due to many causes. In former times it was seen after panics occasioned by the outbreak of a fire, when many persons, desiring to escape injury, rushed through a single narrow aperture, fell over one another in the process and were crushed underfoot.

In our industrial age, it is mostly manifest in accidents caused by elevators, cranes, steam shovels, cowcatchers, wagons or wheels, in mine and car accidents, and latterly, during the war, in plane crashes. It is also manifest, though to a much milder degree, after the exertion of vomiting (Hoppe),[51] difficult delivery (Cathala and Griffiths),[25] in whooping cough, sea diving (Green)[44] or aneurism of the arch of the aorta (Arnold).[3] It was also reported in epileptic attacks in which it was specially studied by Alexander.[1] In these cases the cyanosis is due to the efforts of muscle contractions occurring during the attacks.

In accidents, compression is always in the antero-posterior direction, against hard objects. This compression can act directly or indirectly, as in the case reported by Jejars [66] where the patient's abdomen and chest were severely compressed when he was run over by a coach which jerked his knees up to his chin. The pressure is usually about the weight of a car, i.e. approximately 1,500 kgs. (3,300 lbs.).

The time during which the body was compressed has been reported differently by the various authors. It is usually given as being from 2 to 5 minutes; the shortest period being 15 seconds in a case reported by Perthes from the Trendelenburg clinic.

SYMPTOMATOLOGY

The clinical picture is formed by shock, skin discoloration, fever, ocular and nasal disturbances, lung and abdominal injuries, and cerebral symptoms.

Shock. Patients suffering from ''Ecchymotic Mask'' usually present the picture of a state of severe shock. The pulse is rapid and feeble, with very low blood pressure, the systolic pressure being below 95 mm. The skin is pale, cold and covered with perspiration. Breathing is laborious and heavy and there is loss of consciousness. According to Hamilton [46] the shock is due to the rupture of intracranical veins.

Skin Discoloration. The skin presents a cyanotic discoloration which can vary from reddish purple to deep violet or black (Cathala and Griffiths).[25] The cyanosis fades under pressure but does not disappear. This is due to the presence of many petechia among which are small areas of normal skin, thus giving to the latter a mottled appearance.

The cyanosis covers the entire face, neck and upper chest anteriorly to the line of the clavicles. Sometimes it extends downwards as low as the level of the nipples anteriorly, and posteriorly to the lower border of the trapezeus muscles, forming a double triangle. In some cases it has been seen to reach the

axillary region, the insertion of the Deltoid muscle on the upper arms and, very rarely, as far down as the bend of the elbow.

The limits of the cyanosis are always very sharply defined. However, cyanosis is lighter, or totally absent, wherever a slight external antagonist pressure is present during the production of the cyanosis, for example, a collar, suspenders, etc. In the case of the sea diver reported by Green,[44] the entire head was free since it had been protected by the rigid helmet which he had worn.

Quite often the cyanotic discoloration of the skin increases after the accident, as in Gardner's case,[42] for example, when discoloration increased for two hours after the accident. The same cyanotic discoloration is also seen on the mucous membranes of the nose, pharynx, larynx and even the trachea and sinuses.

The skin is also edematous and swollen.

There is a blood infiltration of the temporal muscles, the tongue, the floor of the mouth and the sub-lingual glands.

The Eyes. The palpebrae present a swelling, sometimes to such an extent that the patient is unable to open his eyes. Robertson[92] described "a few reddish brown spots just inside the inner surface of the eyelids".

Contrasting with the deep violet color of the skin, the conjunctivae present a vivid red coloration due to a subconjunctival hemorrhage. This hemorrhage has a triangular form with its base towards the caruncula and its apex near the pupil. This is due to the lack of resistance in the palphebral opening. Where the palpebrae cover the eyeball, the resistance is enough to counteract any bleeding.

Exophthalmia is caused by an intraorbital hematoma. It regresses within the time of resorption of the hematoma.

Sometimes one finds a mydriasis associated with a loss of reaction of the pupil to light. The mydriasis may be unilateral or bilateral, and is connected to the amaurosis.

The amaurosis may last from some hours to several days. It can be followed by blindness. Rollet[95] explains it as being caused by compression of the optic nerve by blood effusions in the orbita either around or in the sheath of the second nerve. A. J. Bell offers the same explanation. He made an ophthalmoscopic examination 24 hours after the accident, of a patient who could see only the light, and did not find any hemorrhage in the retina.

If the hematoma resorbs quickly, then the vision comes back; if not, there is production of atrophic lesions of some fibres of the optic nerve, and it is possible, with the aid of an ophthalmoscope, to see a discoloration of the papilla. According to Beal,[10] there is a "retinal concussion: the blood arriving suddenly, the elements of the retina are in a state of traumatic shock".

Retinal hemorrhages are sometimes present. Heuer[50] found in his case through ophthalmoscopic examination of the fundus, a "bilateral retinal oedema with massive haemorrhages scattered over each disc and macular region".

Usually, after the retinal hemorrhage, atrophy of the disc takes place and a more or less severe permanent blindness results. In the above mentioned case of Heuer,[50] the patient became completely blind. In the "Ecchymotic Mask" optic atrophy is always the end result of the resorption of retinal hemorrhages.

Hemorrhages in the Vitreous have been reported by Neck.[76]

The Ears. In some cases, there has been a temporary loss of hearing, with however, prompt recovery. Perthes, in

the case observed at the clinic of Trendelenburg, found a miliary ecchymosis of the ear drums on both sides.

Otorrhagia, by rupture of the ear drums, has also been seen.

The Nose. Epistaxis had been manifest in some cases. The simultaneous presence of otorrhagia and epistaxis leads one to believe that there is a fracture of the base of the skull—a condition which is seen only rarely in the "Ecchymotic Mask".

The Lungs. There is usually a severe dyspnea with stertorous breathing. A hemoptysis may be seen, but on radiography, the lungs appear quite normal.

Green [44] reported a "contusion pneumonia" accompanied by blood stained expectoration, which developed on the third day after the accident and lasted a few days.

Intra-Abdominal Injuries. These are seldom seen. When they are present, however, the patient shows a picture of an acute condition within the abdomen.

Digestive System. Gardner [42] reported a dysphagia in his case, due to a pharyngeal hematoma.

Young [125] saw a hematemesis and the "vomiting contained fragments of clotted blood mingled with ingested food".

Cerebral Symptoms. Usually absent, Gardner [42] surmises, due to the "Baffling effect of large blood sinuses at the base of the brain". Loss of memory for 7 days was reported in Hamilton's case.[46]

COMPLICATIONS

The most commonly seen are fractures. They affect, first of all, the ribs, which directly receive the trauma. One to seven ribs have been reported as fractured. Then comes the radius bone, then the pubis and ischium bones accompanied by a tear of the bladder wall. Hemoperitoneum is also seen. Diminished hearing acuity has been reported. We have already mentioned atrophy of the retina and "contusion pneumonia".

These complications and the shock are usually responsible for death. Death from "contusion pneumonia" occurred in the case described by Voelcker.[118]

PATHOLOGICAL FINDINGS

Ollivier [79, 80], the first to describe the "Ecchymotic Mask", was also the first to perform postmortem examination of such patients.

He remarked that not a single case had a fracture of the base of the skull or of the face. He found a blood exudate on the surface of the cerebral hemispheres in one case. This rarity is due to the intracranial pressure which counteracts the increased intravascular pressure, (Braun[19-23] and Wesseley). There is congestion of the cerebral matter.

Tardieu [113-115] observed that the blood was very dark and accumulated in the right side of the heart, with an increased fluidity "due to the exclusion of atmospheric oxygen" Green.[44]

Hemothorax is sometimes caused by rupture of the lung by a fractured rib. The visceral pleura present a hematoma, the lungs show congestion and edema and thrombosis, contusion pneumonia or bronchopneumonia. Multiple abscess formations are also to be seen.

Tardieu [113-115] in his postmortem examinations, reports congestion and apoplexia of the lungs and ecchymosis of their serous surface with emphysema from ruptured bronchioles through the efforts of the persons struggling with death.

A very important finding was reported by Perthes [84-87] in the case history published from the clinic of Trendelenburg at Leipzig; the thorax of the patient which normally measured 33 cm. in diameter, had been reduced during the accident to 20–25 cm.

The most important finding is the cyanotic discoloration. "Other points of discoloration are the pleura, pericardium and abdominal viscera" (Green[44]).

MICROSCOPICAL FINDINGS

The first to do a microscopic examination of the skin were Beach and Cobb[8] who, under local anesthesia, excised a piece of skin from the neck of their patient and revealed that no hemorrhage was present in the tissues.

Despard,[34] reporting the words of Winslow, says that the microscope "showed the capillaries in places more or less distended with blood, but no blood was found anywhere in the tissues outside of the blood vessels".

Despard[34] brings also the findings of Bolt: the skin "showed in some places an effusion of blood outside the capillary vessels. The number of red blood cells thus situated were relatively small".

LABORATORY FINDINGS

The blood is venous and dark with an increased fluidity which Draper,[35] like Tardieu,[114, 115] attributes to the withdrawal of atmospheric oxygen from the blood, thereby lessening its coagulability.

Cathala[25] found a positive "signe du lacet" but the bleeding and coagulation time was normal. Young[125] states that cyanosis is produced only by diapedesis of blood cells without rupture of the vessels.

The urine is clearly devoid of albumin.

PATHOGENESIS

Perthes, to explain the production of the cyanosis, advanced the hypothesis that from strong pressure on the chest, the venous blood is pushed back into the neck and head. In actual fact, the valves are absent in the innominate vein, as demonstrated by Poirier, and those of the external jugular vein are incompetent; thus there is a production of a paralytic distention of the capillaries of that area, and the overlying skin appears blue. Sometimes there is impotency of the subclavin and axillary veins, and the cyanosis extends to the arms. In the case reported by Green,[44] a sea diver had, for about 10 minutes, to sustain a "pressure on his body through a diving suit at a depth of 37 feet would be about 18½ pounds to the square inch".

According to Lejars,[66] the active participation of the thoracic muscles is most important. In the state of fear, all the muscles contract violently as a defense reaction and the force thus developed is enormous. Lejar's assumption is correct. We are aware that fractures can be produced by sudden contraction of the muscles of the limbs in a reflex defence movement (in the fear of falling, etc.) Alexander[1] reported the case of an epileptic who, after a seizure which threw him from his bed to the floor, was seen to have a cyanosis of the upper face, and Alexander says, with reason: "why, then, during these seizures cannot the intrathoracic pressure be raised by muscle action to a correspondent degree as that produced by trauma?" This assumption is also supported by the presence of lung emphysema and by rupture of bronchioles. (Tardieu).[114-115]

Perthes[84-87] gives the following two explanations for the production of the cyanosis:

a) By mechanical reflux of the blood to the head and neck through incompetency, or even absence, of valves in the innominate veins;
b) By contusion of the abdominal sympathetic system which then produces vasodilatation of the vessels in the head and neck.

But as we shall see, all efforts to reproduce cyanosis, by means of animal experimentation, were fruitless and

Lejars [66] concludes: "one cannot rely exclusively upon the purely physical and passive action of compression of the thorax or the abdomen".

EXPERIMENTAL DATA

Perthes [84-87] was the first to experiment on animals. He tried to reproduce a trauma analogous to that sustained by man during an accident, by compressing the abdomens of white rabbits. However, in this way he could only obtain a dilation of the veins of the ear and a localised cyanosis of the mouth and eyelids.

"Willers, in his experiments, never succeeded in producing—blood extravasation—such as was observed in the two injured persons and one had to conclude that neither pure and simple compression of the abdomen (whatever its intensity, abruptness or suddenness), nor section of the Splanchnic nerves, sufficed or was enough to produce the —blue head". (Lejars).[66]

Vogt, in his experiments on rabbits by "compression of the abdomen either sudden or continued, caused a dilatation of the ear veins, but no discoloration of the face. Division of the Splanchnic nerves in the abdomen caused dilitation of the vessels of the skin but no discoloration of the face" (in Heuer).[50]

But we should not forget that in the rabbit there exists a pair of very strong valves in the jugular veins which do not permit of the ebbing of the blood into the head.

PROGNOSIS

The prognosis is usually good. The patient, if he overcomes the initial shock, escapes death. He returns to a normal condition in a variable length of time (3 days in the case of Beach and Cobb);[8, 9] 3 weeks in the case of Perthes.[84-87]) In the case of Willers,[123] cyanosis of the conjunctivae was still present one year after the accident. In any event, the prognosis must be very guarded in view of the possible ocular changes; optic nerve atrophy and opaque patches of the macula. If death does not result from shock, then it is "due to associated extensive injuries to important structures or to infectious complications" (Laird and Borman).[61] We have seen what are the complications arising from traumatic cyanosis. In the case of Voelcker,[118] death occurred on the tenth day from traumatic pneumonia.

However, cases have been reported to have recovered spontaneously, without any treatment—e.g. the patient of Beach and Cobb.[8,9]

Tardieu [114-115] reported nine deaths out of 40 cases. Laird and Borman,[61] had two deaths out of five cases soon after admission of the patients to the hospital.

The following data are taken also from Laird and Borman:[61]

of 143 cases { 27 were dead, or died very soon after admission; 104 recovered; 12 died later.

TREATMENT

Treatment is symptomatic. The shock is treated according to the understanding of each individual physician, either with normal saline and glucose or with plasma infusion. Oxygen is most helpful and should not be omitted; a dose of 0.2 morphine injection on admission. Fractures should be treated as soon as the shock is overcome.

CASE REPORT

A.R., male, 27 years of age, driver, was the victim of a car accident on November 10, 1943. While driving, he collided with another car coming from an opposite direction. The car which he was driving over-

turned and he fell under it. His chest supported the weight of the car (about 1,500 kgs.) for some 3 minutes. When, after this lapse of time, he was rescued, he looked like one dead. His face was deep violet in color and breathing had stopped. Artificial respiration was at once instituted, and after some minutes, breathing returned. He was then brought to the Government Hospital, Haifa. On admission he presented a state of shock and was unconscious. He was cold and covered with perspiration; breathing was laborious and stertorous, pulse very poor, depressible, but normal in rate (84/minute). The blood pressure was 75/50. Heart beats and lung breathing sounds were normal. Liver and spleen were not palpable. The face, neck and upper chest, up to the clavicles presented a deep violet discoloration. The face was also edematous. Both eyes presented a subconjunctival hemorrhage, with bulging of the conjunctivae which, in contrast to the face, were deep red. The eyelids were edemotous to such an extent that the patient could not open his eyes. There was bleeding from the nose but not from the ears. The patient had a slight hemoptysis. He had a Colle's fracture of the left hand.

Treatment: Routine treatment for shock in our hospital, initiated by members of the staff, was immediately applied. This consists of:

1. Continuous oxygen mask inhalation until the pulse and blood pressure improved and remained so.
2. Adrenalin 1 mgm. and atropine 0.25 mgm. in 1 c.c. of an oily solution, given in an intramuscular injection.
3. Hypertonic alkaline salt solution: 200 c.c. in intravenous infusion. This solution contains 3 per cent NaCl and 3 per cent Na_2HPO_4 at a PH = 9.2 morphine hydrochloride Og.01 in subcutaneous injection.
4. Hot water bottle to the legs.

Three and one-half hours later the blood pressure rose to 100/55; pulse was 84/min.

The patient's general condition continued to improve in the subsequent hours, and he was out of immediate danger of death. He became coherent and complained of pain in the back and blurred vision; he could only see forms, could not recognize his surroundings or count fingers at a distance of one meter.

Vision was equal in both eyes. The following day vision became completely normal. Hearing was normal throughout. The patient had slight fever (37.5° C.) on the third day. The cyanosis of the skin began to clear up on the fourth day, but disappeared entirely only after a period of 3 weeks had elapsed. The conjunctivae, however, remained red for about 2 months, the color fading gradually.

The Colle's fracture was reduced in due course and fixed in a posterior slab of plaster of paris. X-ray of the lungs on the tenth day was negative.

No sequellae remained from the accident and the patient was able to resume his normal life.

SUMMARY

The "Ecchymotic Mask" is a syndrome mostly seen after traumatic compression of the chest and abdomen. It is characterized by a cyanotic discoloration of the skin of the face, neck and upper chest and of the conjunctivae, remaining even after pressure is removed. It may be complicated by an atrophy of the retina with complete blindness. It is due to a paralytic distension of the capillaries. Prognosis is usually good if death does not ensue immediately. The treatment is only symptomatic.

The syndrome is caused by the sudden reflex of the blood into the vessels of the neck and head after strong exertion of any kind. For this reason we prefer the designation "Ecchymotic Mask" to that of "Traumatic asphyxia" which is too limited—the appearance of the syndrome is not always due to trauma, as we have seen in the many cases reported in the literature.

This syndrome may be either slight or severe and may lead to death, the main cause being shock. Therapeutic measures must therefore be directed

chiefly toward the immediate and effective treatment of the shock. Only thus can one aspire to success, as in the case cited.

SOMMAIRE

Le "masque ecchymotique" est un syndrome déterminé par le reflux du sang dans les vaisseu du cout et de la tête survenant après de grands efforts physiques dé différentes nature. L'auteur préfère ce titre au terme "asphyxie traumatique" employé parfois pour ce syndrome car ce syndrome n'est pas toujours dú à un traumatisme. L'auteur nous dit que ce syndrome s'observe ordinairement après une compression traumatique du thorax et de l'abdomen tel que après des accidents d'automobile, après des paniques. Ce syndrome est caracterisé par la coloration cyanotique de la peau de la figure du cou, de la partie supérieure de la poitrine, de la conjonctive, cette coloration persiste. Comme complication, il peut résulter une complete témporaire ou permanente. Si la mort ne survient pas immédiatement, le prognostic est ordinairement bon. Le traitement décrit par l'auteur est symptomatique; le traitement du choc est de la plus haute importance.

RESUMEN

La "máscara equimósica" es un sindrome originado por el aflujo súbito de la sangre dentro de los vasos del cuello y la cabeza después de fuertes ejercicios de culaquier naturaleza. El autor prefiere esta denominación al término "asfixia traumática" que algunas veces se ha empleado para designar este sindrome, ya que constituye una expresión demasiado limitada y, por otra parte, la aparición del sindrome no siempre va ligada a traumatismos.

El autor hace constar que este estado se observa corrientemente después de la compresión traumática del pecho y abdomen, como sucede en los accidentes de automovil y en los producidos por pánico. El estado se caracteriza por la decoloración cianótica de la piel de la cara, cuello, parte superior del torax y la conjuntiva, que sigue presente incluso después de eliminar la presión causante. Puede complicarse con atrofia de la retina y cegera total, ya sea temporal o permanente. El pronóstico es por lo general bueno si la muerte no ocurre inmediatamente. El tratamiento, tal como se describe, consiste en una terapéutica sintomática: las medidas instauradas deben tener como principal objeto el tratamiento inmediato del shock que constituye uno de los factores de mayor importancia en este estado patológico.

Свод

"Экхимозная маска" это синдром, причиненный отливом крови в сосуды шеи и головы после какого бы то ни было сильного напряжения. Автор заявляет, что он предпочитает это имя термину "трауматическая асфиксия", иногда применяющаяся к этому синдрому, так как его появление не всегда ограничено траумой.

Автор говорит, что это состояние обыкновенно наблюдается после трауматического сжатия груди или живота, как при автомобильных несчастных случаях или при паниках. Он характеризуется цианозом кожи лица, шеи и верхней части груди, а также коньюнктивом, остающимся после удаления давления. Он может быть осложнен атрофией глазной сетчатки и полной слепотой, временной или постоянной. Если смерть сейчас же не наступает, то прогноз хорош. Данный план лечеия только симптоматический; терапевтические меры должны быть направлены главным образом к немедленному лечению шока, который является одной из самых важных особенностей этого состояния.

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rapidly and became ulcerated. The growth was of the size of a mandrel, firm, occupying almost the whole nasal region, ulcerated and producing a purulent discharge, foul in character. The lymphatic nodes of the neck were enlarged. Biopsy showed a typical picture of plasmocytoma cells. (Fig. 2B.) Reaction to Bence-Jones test was negative.

Roentgenologic examination of the long bones and the skull did not reveal any alteration referrable to myeloma.

The case was diagnosed as an extramedullary plasmocytoma arising from the mucosa of the nose. Because of the inoperability of the growth, we recommended radiotherapy to the patient, but since then we have had no news from him.

SUMMARY

Case reports of three patients with plasmocytomas arising from soft tissues are presented. Two of these were located in the intestinal tract, one on the nose. The two of internal origin occurred in patients aged 8 and 15 years, and were operated; the third, in an adult, was treated by X-radiation. Both of the young patients died; of the third, there was no final report.

SOMMAIRE

Trois cas de plasmocystome des tissus nous sont présentés. Deux des cas intéressaient l'intestin, un cas intéressait le nez. Les cas d'origine intéstinal sourvinrent chez des malades, de 8 et de quenze ans et furent opérés; le troisième, un adute, fut traîté par la X-radiation. Les deux jeunes malades moururent; sur le troisième cas, il n'y a aucun rapport final.

RESUMEN

Se presentan en este trabajo tres casos de plasmocitoma desarrollado a partir de tejidos blandos. Dos de los casos tenían la lesión localizada en el tracto intestinal y uno en la nariz. Las dos lesiones do origen interno se presentaron en pacientes de edades de 8 y 15 años y fueron objeto de operación; el tercer caso se presentó en un adulto y fué tratado con rayos-X. Los dos pacientes niños fallecieron y del tercero no se tiene noticia final.

Свод

Доложены 2 случая плазмоцитомы мягких тканей, из которых два были плазмоцитомы кишечника и один—носа. Оба случая внутреннего происхождения были у больных 8 и 15 лет и были оперированы, третий, во взрослом, был лечен рентгенотерапией. Оба молодые больные умерли, результат в третьем еще не известен.

Treatment and Prevention of Thrombosis with Dicoumarol

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RECENT years have witnessed great advances in the prevention and control of many postoperative complications and hazards, such as shock, circulatory and metabolic disturbances and postoperative infections. These advances have been due to improved preoperative preparation and to the introduction and development of the sulphonamides, penicillin, etc. With the striking progress which has been made in these fields, it is natural that the attention of the surgeon should be directed more and more toward thrombotic and embolic complications which, until recently, have remained outside the range of therapeutic possibility.

Extensive experimental and clinical studies have been made in the United States (e.g., Bingham *et al.* 1941, 1942; Butt *et al.* 1941; Allen *et al.*, 1942, 1943; Wright and Prandoni, 1942; Davidson and MacDonald, 1943), in Sweden (Lehmann, 1942 a and b, 1943) and more recently, in Britain, on the use of the synthetic anti-prothrombic agent, dicaumarol, for the establishment of artificial hypoprothrombinemia. Because of the earlier difficulties already referred to, this work has quickly aroused the interest of clinicians and, more particularly, of surgeons.

ACTION

It has been shown by Link and his collaborators (1940, 1941, 1942 a, b, c,) that dicoumarol acts physiologically by reducing the prothrombin content of the blood and that the measurable degree of hypoprothrombinemia depends upon the dose given. Thus, for the first time, we have at our disposal a drug capable of affecting therapeutically the course of thromboses and, above all, of preventing or minimizing the occurrence of postoperative thrombosis and embolism. Dicoumarol, when given by mouth, produces a remarkable prolongation of the prothrombin and coagulation times of the blood, after a "latent period" of between 24 and 48 hours. The increase in the prothrombin time indicates a diminution of the prothrombin in the blood, ensuring lowered coagulability of the blood and, therefore, a therapeutic influence or even prophylaxis of thrombosis.

Several theories have been put forward for the mechanism of the anti-prothrombic action of dicoumarol which is most probably one of inhibition of prothrombin formation in the liver.

THERAPEUTIC USES

Owing to its prothrombin-depressing effect, dicoumarol is indicated in the treatment of thrombosis and other thromboembolic conditions, as well as for the prevention of postoperative thrombosis and embolism. Generally speaking, it is of value in circulatory and vascular disturbances where it is desirable to reduce the clotting power of the blood.

This paper presents the results of our first thirty-one cases treated with "Temparin" brand dicoumarol. (Prepared and supplied by Herts Pharmaceuticals Ltd., Welwyn Garden City, England.) Of these, seventeen cases had thrombophlebitic and endoarteritic conditions. To the remaining fourteen patients, the

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drug was given prophylactically. It will be seen from the case reports that in many instances there is a certain amount of overlapping of prophylactic and therapeutic treatment and the separation into therapeutic and prophylactic cases is, therefore, not as clear-cut as the above figures might suggest.

In view of the hemorrhagic nature of the antiprothrombic drug, constant control of the prothrombin content of the blood and greatest care in its administration are, in our experience, necessary and an *a priori* dose schedule cannot be adhered to, in view of the variable individual responses observed. Similar variations in the individual response to the drug have been reported by other workers (e.g., Townsend and Mills, 1942, Davidson and MacDonald, 1943, Wassermann and Stats, 1943, Douthwaite, 1944). The question of dosage will be dealt with in detail later on.

TREATMENT OF EXISTING THROMBOPHLEBITIC AND ENDOARTERITIC CONDITIONS

(a) Unilateral Thrombophlebitis: The following seven cases were treated with "Temparin" brand dicoumarol, thrombophlebitis having occurred as follows: after appendicectomy; after operation for varicose veins; after typhoid fever; nine days after confinement; after furunculosis; and in a case with existing varicosites of the large saphenous vein.

The time of treatment varied from three to nine days and the total dosage from 500 to 800 milligrammes. All seven cases have remained free from recurrences.

(b) Bilateral Thrombophlebitis: Two such cases were treated.

Case 1: Thrombophlebitis followed septic tonsillitis. This case, the first to be treated by us with dicoumarol, was remarkable and instructive in two respects. Treatment was commenced in hospital but, at the patient's insistent request, it had to be continued in its later stages at his home. Continued laboratory control of his blood prothrombin was, therefore, not possible in the later stages. 900 mg. of Temparin were given in the course of 6 days. After disappearance of the bilateral thrombosis, rather severe hemorrhage occurred, persisting for 4 days. This was undoubtedly caused by overdosage. However, the patient's condition did not call for blood transfusion or other therapeutic measures. Eight days later, he developed acute suppurative appendicitis, probably also of embolic origin. During the operation there was no evidence of any abnormal tendency to bleed, and he made a normal recovery.

Case 2: A woman had a chronic bilateral thrombophlebitis which had been recurring regularly following confinement 6½ years ago and appendicitis 4 years ago. The patient was almost constantly confined to bed and suffering the painful effects of the bilateral venous thrombosis in the upper regions of the thigh. On administering a total dose of 800 mg. of Temparin, the thrombophlebitis disappeared in the course of eight days, and after a fortnight the patient was able to walk without discomfort.

It is perhaps noteworthy that this patient, who had been suffering from amenorrhea ever since her first attack of thrombophlebitis 6½ years ago, started to menstruate lightly on the sixth day of antiprothrombic therapy. It is, of course, impossible to say, on the basis of this one case, whether menstruation was due to the increased hemorrhagic tendency induced by the drug, or whether it had occurred because possibly the ovarian vein, previously blocked, was now cleared. In any case, following treatment with dicoumarol, if not owing to it, the patient has continued to menstruate normally and regularly. So far as we have been able to ascertain from the literature, there appears to be little information on the effect of the drug upon the menstrual cycle. Lehmann (1942b) has stated

that the menstrual flow is not increased provided that the prothrombin level remains above 30 per cent of normal; other workers, for instance Allen *et al.*, working at prothrombin concentrations as low as 10 to 20 per cent, do not appear to have observed any effects on menstruation at all.

(c) Septic Multiple and Recurrent Thrombophlebitis: Two cases of this type have been observed and treated with dicoumarol.

Case 3: A bilateral phlebitis developed after gas gangrene. The phlebitis disappeared after three days' treatment, but recurred when the patient began to walk. Complete cure was achieved only by combined dicoumarol-sulphanilamide therapy.

Case 4: Multiple phlebitis followed chicken-pox. This was the only case in our experience which showed strong resistance to anticoagulant therapy with dicoumarol. With the usual dose of Temparin giving rise to quite a normal prolongation of the prothrombin time, we were able to effect regularly only a temporary disappearance of the thrombosis. It would soon recur attacking alternately the saphenous and cephalic veins. After six weeks of recurrences following only temporary relief, combined sulphanilamide-Temparin treatment was again resorted to and complete and lasting cure achieved in this way.

(d) Thrombophlebitis with Pulmonary Infraction:

Case 5: An emphysematous patient had mitral insufficiency. He had undergone operation for rectal fistula and hemorrhoids, using electrocoagulation. On the fifth day after the operation, severe phlebitis appeared on the right side, with slight hemoptesis, pulmonary infarction and pain above the base of the right lung. Circulation was unsatisfactory.

Treatment: A total dosage of 800 mg. of Temparin was administered over 10 days when the severe congestive phlebitis and all symptoms of the infarction, which had liquified and been expectorated, disappeared. The patient was discharged 14 days after the onset of the attack. He has remained free from recurrence and symptoms.

(e) Phlegmasia Alba Dolens and Endarteritis Obliterans:

Case 6: Phlegmasia alba dolens. The patient, a physician aged 70, suffered from "Bouveret's Disease," i.e. paroxysmal tachycardia with noncompensated increased blood urea (approximately 80 mg. per cent), extreme prostration and compensated diabetes mellitus. Four years previously, he had been under treatment for thrombosis of the left leg extending up to the iliac vein. On that occasion, hospital treatment lasted three months. Since that time the patient had been suffering from large varicosities with ulcer formation, and for the last six months he had been complaining of a feeling of cold in his left leg and of intermittent dysbasia. During the last fortnight before admission, the patient suffered unbearable stabbing pain with loss of sensation, no pulsation in any of the arteries up to the femoral artery and waxy discoloration of the leg; phlegmasia alba dolens.

Normally, this critical condition would have necessitated immediate amputation. However, since, in his poor general condition, (paroxysmal tachycardia, uremia, diabetes, prostration) the patient would almost certainly not have survived amputation, we commenced dicoumarol therapy. After four days, during which period a total dose of 700 mg. of Temparin was administered, the threatening symptoms began to recede and the deathly white pallor of the foot changed to a cyanotic appearance, with pain diminishing and sensation returning to a very large extent. Antiprothrombic treatment was continued until a prothrombin concentration of 22 per cent of normal was reached and the necessity for operation was thus avoided for the time being.

This case, which at the onset of treatment showed no pulsation at all in any of the arteries, is perhaps best illustrated by the accompanying table, showing the partial return and improvement of vibration at dif-

EFFECT OF DICOUMAROL ("TEMPARIN") ON THE ARTERIAL PULSATION IN PHLEGMASIA ALBA DOLENS

(CASE 12)

Blood Pressure (mm Hg)	*A. Femoralis*				*A. Poplitea*				*A. Tibialis*			
	Left		Right		Left		Right		Left		Right	
	Vibration on Admission	Vibration After 8 Days (700 mg)	Vibration on Admission	Vibration After 8 Days (700 mg)	Vibration on Admission	Vibration After 8 Days (700 mg)	Vibration on Admission	Vibration After 8 Days (700 mg)	Vibration on Admission	Vibration After 8 Days (700 mg)	Vibration on Admission	Vibration After 8 Days (700 mg)
140	0	0.5	1.5	1.5	0	0.75	1.5	1.5	0	0	0.25	0.25
130	0	0.5	2.0	1.5	0	0.5	2.0	2.5	0	0	0.25	0.25
120	0	0.5	1.5	1.0	0	0.75	2.5	2.5	0	0	0.25	0.25
110	0	0.75	0.75	0.75	0	0.75	1.5	1.5	0	0	0.25	0.25
100	0.25	0.75	0.75	0.75	0	0.5	1.5	1.5	0	0	0.25	0.5
90	0	0.5	0.75	0.5	0	0.5	1.0	1.5	0	0	0.25	0.25
80	0	0.5	0.5	0.5	0	0.5	1.0	1.5	0	0	0.25	0.25
70	0	0.5	0.5	0.5	0	0.25	1.0	1.0	0	0	0.25	0.25
60	0	0.25	0.5	0.75	0	0.25	0.75	0.5	0	0	0.25	0.25
50	0	0.25	0.5	0.5	0	...	1.0	0.5	0	0	0.25	0.25
40	0	0.25	0.25	0.25	0	...	0.25	0.25	0	0	0.25	....
30	0	0.25	...	0.25	0	...	0.25	0.25	0	0	0.25	....
20	0	...	...	...	0	...	0.25	...	0	0	....	....
10	0	...	...	...	0	...	...	...	0	0	....	....

ferent pressure grades after eight days of treatment with Temparin.

It is, however, obvious that even the most drastic reduction of the prothrombin will give only conditional relief in diabetic arteriosclerotic endarteritis. In this particular case we were forced, six weeks later, to amputate owing to gangrene. However, renewed treatment with Temparin preceding amputation made it possible for us to amputate at the site of choice. In this way, shock was avoided and the life of the patient saved. For, in view of the improved circulation, we were able to amputate below the knee instead of in the upper third of the thigh. There can be no doubt that this patient in his poor condition could not have survived the shock of a high amputation.

Similar conditions prevailed in the following two cases:

Case 7: A woman, aged 64, showed diabetic arteritis obliterans. Eight months previously, gangrene in the right leg had necessitated amputation in the upper third of the right thigh. Now, gangrene of the left foot had set in. After careful preoperative treatment with Temparin, amputation below the knee could be performed and the shock of high amputation avoided.

Case 8: This patient, a woman, aged 50, had undergone bilateral sympathectomy for the relief of endarteritis obliterans of both legs four months earlier. Now, dry gangrene of the toes of the left foot had set in. Amputation was indicated. Dicoumarol therapy produced improved vibration, the bluish black gangrenous tissue changed to new granulation tissue with rapid epithelization. Recovery was complete.

(f) Cerebral Thrombosis:

Although cerebral thromboses do not principally concern the surgeon, it was felt that an attempt to influence this condition therapeutically by reduction of the prothrombin level would be of considerable interest. It seems to us that the experiment has been fully justified by its success.

Two cases of cerebral thrombosis have been treated, with the co-operation of the attending physician:

Case 9: A man, aged 56, had a blood pressure of 175/100, with recent facial paralysis, hemiplegia on the right side and aphasia. After antiprothrombic treatment for three days (total dose 600 mg. Temparin), the patient was able to move his arm. After

another two days (total dose 1,000 mg.) he was able to leave the bed and to walk with the aid of a stick. Speech returned almost to normal. After a further three days, i.e. 8 days after beginning the treatment, the patient walked without a stick, the facial paralysis had disappeared although there still remained a certain rigidity of the right side and the patient was discharged.

Case 10: A woman, 65 years old, showed blood pressure 190/100. Her condition on admission showed total paralysis of the left arm, severe paralysis of the left leg and total facial paralysis on the right side. There were dysarthia and difficulty in swallowing. Treatment with heparin and acetylcholine had been tried but without effect. After a four days' course of dicoumarol therapy (700 mg.), the patient began to move both upper and lower extremities, speech returned and facial paralysis had almost disappeared. Further treatment brought about rapid improvement so that six days after commencement of the treatment the patient began to walk.

Whilst admitting the widespread tendency of cerebral thromboses to spontaneous recovery, it is felt that the speed and completeness of recovery experienced in these two cases strongly point to the artificially induced hypoprothrombinemia as the responsible factor.

Before concluding this section on the therapeutic use of this drug I wish to point, in passing, to its indication in the treatment of the disastrous thrombosis of the central retinal vein. The possibility of direct observation of the vascular disturbance and of studying the various stages of recovery should afford a unique opportunity. It is hoped to report further on this aspect in the near future.

PROPHYLACTIC USE

The results of prophylactic dicoumarol treatment, though less dramatic, are no less impressive. In order to assess the prophylactic effect and value of the preparation, we have selected only such cases as, by experience and on account of the special conditions they presented, were particularly liable to a thrombotic or embolic complication.

(a) Gynecological Laparotomies:

(1) Extra-uterine pregnancies in the second and third months, respectively. Both cases, already showing numerous adhesions in the abdominal cavity, were undoubtedly strongly predisposed to thrombosis.

(2) Myomectomy performed on a patient with myomatous uterus.

(3) Ovarian cyst with twisted pedicle.

(4) Hysterectomy with bilateral, strongly adherent ovarian cysts requiring extensive and unforseen atypical ligature of veins and resection of the ureter.

All five patients made uneventful recoveries without thrombotic symptoms.

(b) Complicated Hernias:

(1) Hernia permagna in a very obese man.

(2) Strangulated inguinal hernia in a woman of 69 with severe varicosities of the mesenteric veins.

(3) Large strangulated hernias in two aged and esthenic patients of 65 and 69 years, respectively.

All cases remained free from thrombosis or other complications.

(c) Complicated Appendicitis:

(1) Acute appendicitis in a patient with existing greatly advanced varicose veins.

(2) Suppurative appendicitis with gangrene of the cecum, following septic diphtheria; complicated by low blood pressure and extreme asthenia.

(3) Suppurative appendicitis with metastatic abscesses.

All recovered without postoperative complications.

(d) Unusual Laparotomies:

(1) Retroperitoneal cyst with acute ileus in a patient with large, abnormally congested veins. Numerous venous resections; extirpation difficult.

(2) Pancreatic cyst in a cachectic woman who had recently lost 55 (121 lbs.) kilos in weight.

Both cases remained without thrombotic complications.

Thus we see that among the 14 prophylactically treated cases which, judged from their individual conditions and from statistical experience, were predisposed to the development of postoperative thrombosis, there has in fact been no single thrombo-embolic complication. We are, therefore, forced to the conclusion that this result can only be due to the state of hypoprothrombinemia induced by Temparin.

Postoperative progress and the healing of wounds were in no way influenced or disturbed by Temparin treatment in any of the prophylactically treated cases.

DOSAGE AND COMPLICATIONS

The doses employed by us have been indicated repeatedly in the course of this communication. However, they were found to be extremely variable, depending upon the prothrombin levels obtained. In our experience, prothrombin values lying approximately between 23 and 50 per cent of normal were therapeutically effective. The dosage required to attain these values varied considerably with individual response. As a rule, treatment was commenced with an initial dose of 300 mg. to be followed by a daily dose of 200 or 100 mg. until the desired reduction in the prothrombin level was obtained.

In the absence of a "standard dose", frequent, preferably daily, controls of the prothrombin time are indispensable. The dosage must be adjusted individually in accordance with the response of each patient as reflected by the prothrombin time. The method used in our hospital is an adaptation of Fullerton's modification (1940) of Quick's method (1937, 1938, 1940).

As already mentioned, we encountered one instance of severe hemorrhage *(case 1)*. This patient, by his insistence upon treatment at home, evaded continued laboratory control, and individual adjustment of dosage along the lines suggested above was therefore impossible in this case.

A complication of a different type was encountered in a patient with saphenous thrombosis. After administration of 600 mg. of Temparin, this patient complained of violent hepatic pain, and there was tenderness of the liver. He was a distinctly anaphylactic and allergic type and had a history of liver disease. As prothrombin is formed in the liver it may be assumed that in this allergic patient, some disturbance of the liver function was caused. Two days after discontinuation of dicoumarol therapy, the liver symptoms disappeared. After a further two days, the thrombosis also disappeared.

Essentially the same dosage was used both for the treatment and for the prophylaxis of thrombo-embolic processes, although, for the latter, we have recently come to rely to an increasing extent upon a more standardized dose and scheme of administration which is as follows:

An initial dose of 300 mg. is given on the evening before the operation; this is followed by 200 mg. after the operation and 100 mg. each on the second, third and fourth days. This method of administration takes advantage of the latent period of at least 24 hours which invariably occurs before the

effect of the drug on the prothrombin time of the blood begins to manifest itself, and there should therefore be no undue risk of excessive bleeding during, or immediately after, the operation. On the other hand, the importance of achieving hypoprothrombinemia after the operation with as little delay as possible is obvious.

In this connection, mention may be made of the observations of Bollman and Preston (1942) on dogs and those of Butsch and Stewart (1942) on surgical cases. Their results suggest that hypoprothrombinemia established preoperatively by the administration, over a period, of therapeutic doses of dicoumarol, failed to give rise to excessive bleeding during subsequent operation or to interfere with the healing of the wound. It will be noted, however, that in our technic of prophylactic administration, as outlined above, no preoperative hypoprothrombinemia is actually allowed to develop, the operation being performed during the latent period of the drug.

Temparin was administered in this manner to most of our gynecological patients and to some others who, by experience, were judged liable to postoperative thrombosis. In most of the other cases, the risk of thrombosis only became apparent in the course of the operation, and here antiprothrombin treatment was started postoperatively on the day of the operation or on the following day.

Our experience with the "preoperative" series did in no case reveal any increased tendency to bleeding during or after the operation.

CONCLUSIONS

As shown in this paper, widely varying forms of thrombophlebitic conditions have been successfully treated by means of hypoprothrombinemia artificially induced by dicoumarol ("Temparin"). Under the influence of this drug, the thromboses are cured in a fraction of the time which is normally required in the absence of antiprothrombic therapy.

Antiprothrombic therapy has also proved effective in endarteritis and phlegmasia alba dolens and may even restore normal conditions in the early stages of gangrene. In cases of arteriosclerotic diabetic gangrene, pretreatment with dicoumarol resulted in improved peripheral circulation and, consequently, amputation below the knee could be performed in two cases, neither of which could have survived the shock which would have followed higher amputation.

The drug, when given in therapeutic doses, gave no untoward reactions whatever, except in one patient who had a history of liver disease. In only one case was hemorrhage encountered. Except for this instance, which was due to overdosage, there was no increased tendency to bleed, even from operative wounds, e.g., after appendectomy and amputations following extensive anticoagulant therapy, providing that frequent determinations of the prothrombin time were made during treatment and the dosage adjusted in each case in the light of the prothrombin values obtained.

The results with postoperative, i.e., prophylactic, use of dicoumarol, appear to us the most important. The risk of subsequent postoperative thrombosis and embolism can, it seems, be avoided almost with certainty. A method of prophylactic rountine administration, starting with a standard initial dose on the eve of the operation, has been found to be effective and safe.

The prophylactic use of the drug is clearly of particular importance with certain gynecological operations and major surgical procedures. According to our experience so far, herniotomy in

elderly patients, for example, no longer presents the risk of embolism. But it is, above all, in the field of major surgical procedure that the unpredictable spectre of thrombosis and embolism now appears capable of being conquered at last.

The real advance thus made in the prophylaxis of thrombosis and embolism is perhaps best seen if we consider that, almost invariably, it is precisely the most daring, and therefore the most successful, operations that are threatened by the unpredictable occurrence of thrombo-embolism. It is, therefore, an advance along the path which will increasingly determine medical thought and technic in the future—the path of prophylactic therapy.

(Foreign summaries of this material will appear in the next issue.)

After the completion of this series of cases and during the preparation of this paper for publication, a paper by Brambel and Locker (1944) came to my notice, reporting similar experiences with 11 cases with post-traumatic arteriosclerosis and gangrene due to frostbite and diabetes. Dicoumarol prevented extension of established gangrene and was considered responsible for preventing the development of gangrene in the traumatic cases.

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THE SIGNIFICANCE OF THE LATENT PERIOD WHICH ELAPSES BETWEEN ONSET AND RADIOGRAPHIC APPEARANCES *

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In most diseases there is a latent radiographic period between onset and radiographic signs. The latter do not coincide with the development of clinical signs but lag behind.

The interval between the appearance of clinical signs and the appearance of radiographic signs varies, not only in different diseases, but in different lesions and sites of these diseases. The clinical signs may have disappeared before the radiographic appear—the latter may persist to the end of the life of a healthy individual.

Obviously radiographs during the latent radiographic period will reveal no evidence of the disease though it may be present—further radiographs must be taken at an interval depending on the condition, if we wish to obtain confirmatory radiographic evidence. The interval between the first negative radiograph and the request for the second which shows positive signs is usually

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(Continued on page 279)

Tumors of the Male Breast

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IN medical circles a lesion of the male breast is apt to be regarded primarily as an oddity. The relative rarity of this phenomenon tends to obscure both its pathologic and therapeutic significance. The subject of tumors of the male breast is, however, not to be underestimated and perhaps warrants the presentation of even a small series of cases, such as the 25 herein reported.

INCIDENCE AND TYPES OF LESIONS

The literature abounds in evidence of the great preponderance of lesions of the female breast over those of the male breast. Horsley[1] estimated that of all the lesions of the breast afflicting both sexes, from 3 to 5 per cent only occur in men. In his series of 41 cases of lesions of the male breast, the ratio was 1 to 23. Neal[2] reported that of all lesions of the breast, 3.31 per cent were observed in men. This ratio of approximately 1 to 29 was present in his large series of 9,279 cases in which lesions of the male and female breasts were included; 308 of these cases were in men. Of 1,872 cases of disease of the breast reported by de Cholnoky,[3] 119, or 6 per cent, occurred in men. In a review of 17,486 cases, Schreiner[4] noted 1,664 cases of disease of the breast, of which only 31, or slightly less than 2 per cent, occurred in men.

The mammary gland in the male may be the site of any of the diseases that occur in this gland in the female. Too, the microscopic appearance is practically identical in either sex. It is noteworthy, therefore, that the pathologic variations between the malignant growths of the male and female breast are merely those of degree and of ratio of types, not of kind.

The order of frequency of the various types of lesion of the male breast, as mentioned by Neal[2] in his comprehensive study, with (1) non-neoplastic processes, 46.42 per cent; (2) benign tumors, 34.09 per cent; (3) carcinomas, 16.23 per cent (those originating in the skin comprising 16 per cent, those of duct or acinus origin 84 per cent); and (4) sarcomas, 19.61 per cent. Of the cases of malignant disease occurring in both sexes in his series, 1.24 per cent of the cases of carcinoma and 19.61 per cent of those of sarcoma, were in men. This author noted that carcinomas were proportionately eighty times more prevalent in the female breast, while sarcomas were sixteen times more prevalent in the male breast. In addition, he observed that carcinomas occurred five times more frequently than sarcomas in the male breast and seventy-nine times more frequently than sarcomas in the female breast. The average age of the patients in his series at the time of observation was, for carcinoma, 57.7 years and, for sarcoma, 39.7 years.

Of the 119 cases of disease of the breast which occurred in men in de Cholnoky's[3] series, there was malignant disease in 17, and in 102 the condition was benign. Carcinoma was present in 15, sarcoma in 1 and benign processes in 15 of the 31 cases included in Schreiner's[4] series. This author concluded that carcinoma of the male breast, comprising 1.25 per cent of all cancers of the breast in his large series, occurs seldom and sarcoma rarely. He regarded carcinoma as malignant as it is

in the female breast; also he noted that it occurs as a rule late in life and that patients generally apply for treatment late in the course of the disease. In the two cases of carcinoma in my series, however, the ages of the patients were 43 and 55 years, approximating the average age mentioned by Neal.[2] Since malignant tumors constitute the most commonly observed lesions of the female breast, with mastitis and other non-neoplastic conditions second and benign tumors third in frequency, it is worthy of note that the order differs for lesions of the male breast with non-neoplastic diseases occurring most frequently, benign tumors next and malignant growths third.

ANATOMY

In some anatomic textbooks the male breast is not even mentioned and in others it is credited with only the rudiments of glandular structure.[1] Frequently it is stated in the literature that there is no differentiation between the male and female breast up to the time of puberty, but that the male breast remains rudimentary — except in rare instances when it hypertrophies under some abnormal stimulation—and that its glandular elements atrophy within a few years, practically disappearing.[5, 6] In consequence, the erroneous impression that the male mammary gland contains only small portions of glandular tissue in an atrophied and nonfunctioning state is readily gained.

Some years ago, Andrews and Kampmeier,[1, 7] by examining serial sections of the breasts of a number of boys and men of all ages, demonstrated that the male breast is a particularly complicated system of open ducts and glandular tissue, by no means vestigial in nature. From this study they noted that the mammary tissue of the adult male persists in essentially the same condition as that present in the preadolescent female and that nearly as much glandular tissue remains in later life as was present in the adolescent period. They also observed that the ducts are patent, each having an opening through the outer skin at the nipple. It was their conclusion that the breast of an adolescent boy is in structure entirely comparable with that of a girl ten years of age.

ETIOLOGY

Why diseases of the breast occur so rarely in the male is problematical. Numerous authors have mentioned the lack of biologic or physiologic activity in the male breast together with the absence of the normal hypertrophies and rhythmic proliferative and regressive changes associated with the female organ. Tumors of the male breast are usually accidental discoveries and seem to arise without apparent reason. They should be recognized earlier and more easily because of the difference in the natural size of the gland and in the amount of fat bed, and because any defect of the male breast should obviously be investigated.

The outstanding etiologic factors are trauma, infection, neoplasms and endocrine disturbances, particularly of the sex glands. Trauma, such as the small injuries incident to industrial hazards, is the most frequently mentioned cause of benign tumors. In view, however, of the numerous types of injury and chronic irritation to which the male breast is subjected, Horsley [1] was of the opinion that the role of trauma as a causative agent is most uncertain. It was a factor in only 4, or 11 per cent, of the 36 cases of fibrous tumor in the male breast reported by de Cholnoky.[3] Neal and Simpson [5] regarded it as an

important factor in cases of acute mastitis for they noted that in most instances there is a history of some preceding injury. In only 1 of the 5 cases of gynecomastia in soldiers, reported by Sullivan and Munslow,[8] was there a definite history of trauma, but all of the patients stated that the constant wearing of a pack aggravated the condition and caused additional enlargement of the breast.

Infection is of primary significance, since mastitis is the commonest lesion of the male breast. The anatomic investigations of Andrews and Kampmeier[7] indicate the opportunity for entrance of infection from without. Although mastitis in the male breast usually occurs during adolescence and is commonly referred to as adolescent mastitis, it nevertheless may be present at all ages.[1] In acute mastitis, the suppurative inflammations are observed as abscesses or as diffuse infiltrations of pus; or the inflammatory reaction may not progress to the degree of suppuration. These acute inflammations may complicate such acute infectious diseases as mumps, pyemia and typhoid fever, as noted by Neal and Simpson.[5] These authors mentioned numerous terms used to designate chronic enlargement, brought about largely by an increase in the fibrous connective tissue and generally presumed to be a type or manifestation of chronic inflammation. Mastitis may be primarily chronic, or the chronic form may follow acute mastitis as manifested by an exudate or as a localized sclerosing repair process. It may be diffuse with enlargement of the breast, as in chronic hypertrophic mastitis, or there may be a hard nodule or nodules, often painful, locally, or in single or multiple areas.

Fortunately, neoplasms in the male breast are more frequently benign than malignant. The debatable role of trauma in the causation of these tumors has been mentioned. Among the benign tumors, the high percentage of the adenoma and adenomafibroma group, as evidenced in my series, the absence of the mixed types of adenofibroma, and the absence of cystic changes are to be noted. De Cholnoky[3] concluded that fibrous tumors probably arise as the effect of hormonal imbalance and are most frequently encountered in early adult life and in old age; he added that fibroadenomas occurring at all ages are benign tumors with no evident tendency toward malignant degeneration. Guy[9] observed that lipoma of the breast proper, of which there were 2 cases in my series, is one of the rarest of tumors, regardless of the age of the patient.

The relation of endocrine disturbances to swelling of the male breast has not been definitely determined.[1] True hypertrophy, or gynecomastia, denotes a morphologic abnormality or a disorder of physiologic function, or both, rather than a surgical condition. This phenomenon is characterized by a growth, neither painful nor inflammatory, which presents the characteristic lobulation of the female organ.[6] Homologous with virginal hypertrophy in the female, slight and transient enlargement of the breast at puberty occurs normally in a certain number of males in the opinion of Jung and Shafton.[10] Diffuse enlargement of one or both breasts may, however, be present and may persist, either at puberty or with the decline of sexual life. Geschickter[11] concluded that this benign enlargement results from an increase in the length of ducts and in periductal connective tissue. Their clinical observations led Lewis and Geschickter[12] to believe that there is a definite relationship between the sex organs and gynecomastia. This condi-

tion is observed in hermaphrodites. Ferguson [13] stated that it occurs in 5 per cent of the cases of chorionic epithelioma and teratoma of the testis. In boys and young adults, enlargement of the breasts may take place following atrophy or excision of one testis with hypertrophy of the interstitial cells of the other testis. In addition, as Horsley [1] pointed out, testicular tumors which contain chorionic tissue secrete both prolan, the pituitary-like sex hormone, and estrin, the female sex hormone.

TREATMENT

In general, the indications for the treatment of tumors of the male breast correspond to those for the treatment of similar conditions in the female breast. Likewise, the type of treatment is the same as the customary therapy for corresponding lesions of the female organ. Excision and immediate pathologic examination are indicated if the neoplasm, or suspected neoplasm, is small. Biopsy should be done when the growth is extensive. If a benign process is demonstrated by microscopic examination, simple excision of the tumor or of the breast is the indicated surgical procedure. If, however, malignant disease is present, radical removal of the breast, with or without irradiation, is immediately in order.

Simple enlargement of the breast in man is as a rule, self limited. Spontaneous regression may occur, as in case 4 herein described, but once the condition is established, endocrine therapy is ineffective. In cases of gynecomastia, excision of the mammary gland is resorted to primarily for the cosmetic effect, and in some instances for psychic considerations as well. Thorek [6] mentioned both successful and unsuccessful use of irradiation and advocated surgical removal in most cases of this phenomenon.

ANALYSIS OF SERIES

In my series of 25 cases, there were 18 of adenofibroma or chronic mastitis, two each of lipoma, syphilitic gumma and carcinoma, and one of gynecomastia. In three of the cases of adenofibroma or chronic mastitis, an undescended testicle was also present. The ages of the patients ranged from fifteen to seventy-four years.

Treatment of the 18 cases of adenofibroma and the two of lipoma, consisted of simple excision, as described in case 1. Recovery was uneventful in all of these cases. In the two cases of syphilitic gumma, one of which is here reported as case 2, the tumor disappeared entirely in about four weeks, but the greatest change, probably representing a 70 per cent decrease, took place following the first injection of neoarsphenamine.

In one of the two cases of carcinoma, which is reported as case 3, the disease was in the early stage. Treatment consisted of a simple mastectomy, followed by irradiation. There has since been no sign of metastasis, and the patient was alive and well after fifteen years had elapsed. In the other case, the malignant process was in the late stage when the patient first came under my observation. Despite radical mastectomy followed by irradiation, metastasis to the lung occurred within nine months with a fatal termination two months later.

In the case of gynecomastia, which is reported as case 4, no treatment was instituted. The patient was merely kept under observation.

REPORT OF CASES

Case 1—J.Z.R., a white man aged 67, complained of a mass in the right breast, which

he had first noticed about a year previously when it was as large as a small marble. It had steadily increased in size, and recently there had been tenderness over and around the nipple.

Physical examination gave negative results except for a growth the size of a lemon involving the nipple as well as the underlying structures of the right breast. All laboratory findings, including reaction to the Kahn test, were negative.

A diagnosis of chronic mastitis was made. A partial mastectomy was performed at the Tampa Municipal Hospital on March 28, 1944. The pathologic diagnosis, made by Dr. H. R. Mills, was chronic cystic mastitis.

Case 2—H.P., a white male, aged 40, presented himself for examination in June 1938, about four months after first noticing tenderness and three months after discovering a hard mass the size of a large walnut in the left breast. This mass had gradually grown until it was as big as a large egg. Two weeks prior to examination the mass had begun to ulcerate at the center.

The patient related that when he was 17 years old, the physician residing in his small community had told him a sore on his penis was of no consequence and, without making studies of the blood, had given him dry calomel with which to treat it. In due time the lesion had healed, and he had had no further trouble.

Physical examination revealed great emaciation. In the left breast at the left of the nipple, which was not involved, a large indurated mass was beginning to ulcerate at the apex. The reaction to the Kahn test was 4 plus. No other physical or laboratory findings were significant.

A diagnosis of syphilitic gumma was made, and treatment with neosalvarsan, bismuth and iodides was begun. There was decided recession of the tumor after the first injection of neosalvarsan had been given, and within thirty days it had disappeared. Treatment was continued until the reaction to the Kahn test remained negative.

Case 3—C.J.O., a white male, aged 43, consulted me because of a mass in the left breast which he had discovered a few days previously when his breast had become tender on palpation.

Physical examination revealed a well nourished man weighing 175 pounds. Aside from the tumor in the left breast, which was the size of a small lemon, there were no significant physical findings. All laboratory examinations including the Wassermann test gave negative results.

A specimen was obtained for biopsy, and an adenocarcinoma in the early stage was reported. A radical mastectomy was performed on Aug. 2, 1920. The patient made an uneventful recovery, and there was no recurrence. When he was examined in July 1935, fifteen years after the operation, he was in excellent physical condition.

Case 4—J.C.C., a white man, aged 74, first consulted me two years ago. He had noticed that his right breast was tender on palpation although not painful. In about two weeks the tenderness had subsided, and the breast had begun to enlarge. When he came under my observation, he was in good health and stated that he had never been ill. He was the father of six children, whose ages ranged at that time from thirty-seven to fifty-three years.

The enlargement continued until the right breast was twice the size of the left breast. The condition then remained stationary for about twelve months and thereafter gradually receded until it was only one-eighth larger than the other breast. There was no discharge from the nipple, nor was there elevation of temperature at any time. No masses could be felt. There was simply an enlarged breast, which was symmetrical. All laboratory examinations gave negative results.

A diagnosis of gynecomastia was made. The patient received no treatment, but was kept under observation. When the last examination was made on Jan. 1, 1945, the right breast was still one-eighth larger than the left breast.

SUMMARY

Tumors of the male breast are discussed in their various aspects, including incidence, types of lesion, anatomy,

etiology and treatment. A series of 25 cases is presented, with 4 illustrative case reports, one each of chronic mastitis, syphilitic gumma, adenocarcinoma and gynecomastia.

SOMMAIRE

Les tumeurs du sein male sont discutées sous différents aspects; fréquence, caractéristiques des lésions, anatomie, pathogénie, traitement. Une série de vingt-cinq cas est présentée. Quatre cas sont étudiés à fond; un de mastite chronique, un de gomme syphilitique, un adénocarcinomé et un de gynécomastie.

RESUMEN

Se estaudia en este artículo los tumores del torax en el hombre, entrando a considerar los diferentes aspectos, tales como frecuencia, tipos de lesión, aspecto anatómico, etiología y tratamiento. Se presenta una serie de 25 casos, de la que se sacan 4 histrias representativas, a saber: una de mastitis crónica, otra de goma sifilítico, otra de adenocarcinoma y, finalmente, otra de ginecomastia.

Свод

Обсуждены опухоли мужской груди с точки зрения частоты, типа, анатомии, этиологии и терапии. Доложена серия 25 случаев и даны 4 истории болезни, иллюстрирующие хронический мастит, сифилитическую гумму, адэнокарциному и гинекомастию.

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(Continued from page 273)

very much longer than the latent radiographic period—probably because the first radiograph was of a patient with prominent symptoms which have shown some abatement in the interval—the second only being called for because of a recrudescence of symptoms or a failure of the latter to clear within a reasonable time. The radiographic signs also lag behind and may even appear to increase after the clinical signs have disappeared, consequently we have to wait to obtain radiographic evidence of the effect of any treatment. Finally a clinical examination is an essential preliminary to any radiographic investigation.

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(Continued from page 250)

ode, les lesions des cordes vocales sont guérissables dans le même pourcentage de cas par l'irradiation et par le chururgie. Il commenté sur le retard apporté au diagnostie de la nature des lésions. Il termine en disant que dans les cas où l'irradiation échoue, où peût toujours avoir recours à la laryngectomie totale.

RESUMEN

Fundándose en su experiencia en el "Tumor Institute" de Chicago y en otros sitios, el autor ha llegado a la conclusión de que la roentgenoterapia constituye un método de creciente importancia en el tratamiento del cáncer de laringe y, en condiciones especiales, es preferible a la laringectomía. Las lesiones precoces de las cuerdas verdaderas pueden ser curadas en un tiempo medio similar por los métodos quirúrgicos o por la irradiación. De todos modos, el autor hace resaltar, el hecho de que desgraciadamente transcurre, por lo general, un demasiado largo período de tiempo entre la aparición de la ronquera y la realización de una exploración adecuada para poner de manifiesto el cáncer. Como final se afirma que la irradiación no constituye una contraindicación a una subsecuente laringectomía total, si el tratamiento precoz descrito fracasara por cualquier razón.

Свод

Из своих наблюдений в Чикагском Опухольном Институте и в других местах автор заключает, что рентгенотерапия занимает более и более важное место в лечении рака гортани и что при особых условиях даже предпочтительна ларингектомии. Раннее поражение настоящей голосовой связки с показанием на ларингофиссуру можно вылечить в одинаковом количестве случаев как хирургией, так и иррадиацией. Но он подчеркивает трагически длинный интервал времени, протекающий между первым появлением охриплости и более не менее адэкватным исследованием, дающим возможность констатировать присутствие рака. Он заключает, что иррадиация не является противопоказанием для последующей ларингектомии, если прежнее лечение почему либо не принесло результатов.

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IN MEMORIAM

PROF. ALBERTO GUTIERREZ, F.I.C.S. (ARGENTINA)

More than a year has passed since the death of Prof. Alberto Gutierrez, of Buenos Aires, yet his memory is still green in the hearts of those who knew and loved him, and recognized and revered his contributions to medicine and surgery. His passing, on February 26, 1945, left in South America, a place that is not likely soon to be filled.

Though he was but 52 years old at the time of his death, he had made contributions to the field of his own specialty that might be envied by men twenty years his senior. More than 300 published articles and books alone, including "Lessons of Clinical Surgery" and "On the Formation of a Surgeon," were but a part of his many accomplishments. The list of offices held, honors accorded and organizations founded or forwarded by him or through his efforts, is too lengthy for detailed recording. They included, to mention only a few, Secretary of the Third and Fourth Argentine Congress of Surgery (1931–32), official Narrator of the Second Brazilian Congress of Surgery (1939), President of the (Argentine) National Academy of Surgery (formerly the Society of Surgery of Buenos Aires), member of the Anaesthesia Society of Italy, corresponding member of the Royal Academy of Medicine of Madrid, founding director of the "Surgery Review" (Revista de Cirugía) and of the "Argentine Revue of Anaesthesia and Analgesia" (Revista Argentina de Anestesia y Analgesia), Director of the Library and Archives of the Society of Surgery of Buenos Aires, secretary and later president of the Medical Society of the Spanish Hospital (Hospital Español), vice-president of the Spanish Cultural Association (Asociación Cultural Española) and director of the Clínica Quirúrgica Gutierrez.

Prof. Gutierrez came of a family of medical men, being both the son and the nephew of physicians. His father, the eminent Dr. Avelino Gutierrez, early encouraged his son to undertake special studies and original research, which resulted in his being able to attain the "Facultad" prize of the Faculty of Medical Sciences of the University of Buenos Aires, for a thesis on the topographical anatomy of the peritoneum, at the age of 24, only a year after graduating from that institution (1916). Shortly thereafter, the young surgeon became head of a group of graduate students engaged in making a special study of this subject at their Alma Mater. This work led shortly to still higher recognition of the value of his studious nature, genuine vocation and extraordinary capacity for original investigation, in the form of an Assistant Professorship of Topographical Anatomy, in connection with which he also had charge of a course in Clinical Surgery and held the post of Surgeon-in-Chief of the Woman's Section of the Hospital Español (Spanish Hospital) of his native city.

The International College of Surgeons joins the medical fraternity of Latin America in mourning the passing of this truly great man, and has caused to be spread upon its records a resolution testifying to his merits and contributions during his lifetime and to the irreparable loss occasioned by his death.

THEODORE JOHN DIMITRY, M.D., F.A.C.S., F.I.C.S.

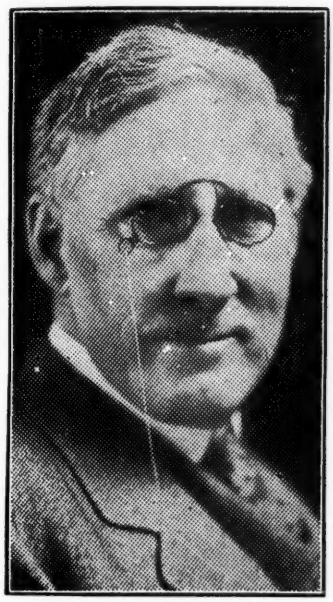
Dr. Theodore J. Dimitry of New Orleans, Louisiana, died October 27, 1945, following an illness of nearly a year. He was 65 years old.

Dr. Dimitry was an eye and brain specialist of considerable note, not only in his native city, but throughout the medical world. He attracted widespread attention in 1941 by his announcement, made at the International Congress of Surgeons, of his invention of an artificial eye made of lucite, which was so designed that it could be moved in a natural manner by the muscles of the orbit.

Born in New Orleans and educated in the public schools of that city and at Tulane University, Dr. Dimitry received his medical degree in 1901. He headed the ophthalmological department of Louisiana State University Medical School from very shortly after its foundation; he was also head of the eye clinic of the Charity Hospital for more than 20 years, as well as professor of special anatomy at Loyala University.

He was a Charter member of the International College of Surgeons, of which he was formerly Southern Regent and belonged to a number of other local and national medical organizations as well. Two sons, Theodore J., Jr. and Earl A. Dimitry, are also physicians.

WILLIAM JEPSON, M.D., F.A.C.S., F.I.C.S.



DR. WILLIAM JEPSON

In these days of swift and frequent change, it is rare to find a physician who has stayed for half a century in one place, doing his duty as he sees it, without thought for wider fields in which he might add to his own personal glory. Such a man was Dr. William Jepson of Sioux City, Iowa, who died, following an operation, on November 30, 1945, at the age of 82.

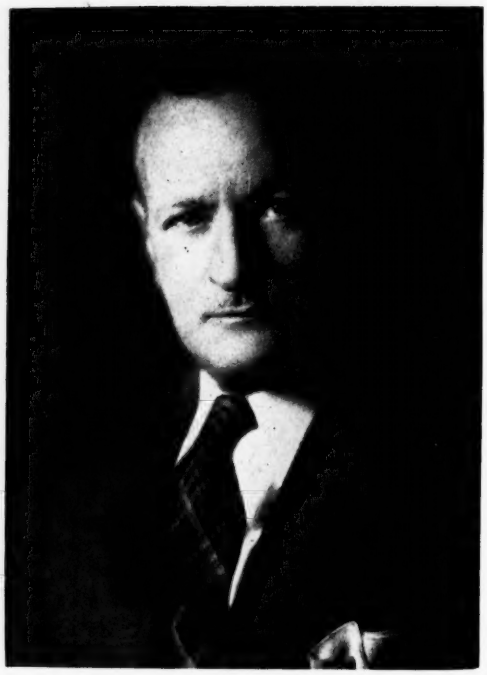
Though Dr. Jepson served his entire professional life within a few miles of his childhood home, he was by no means the provincial that this might seem to imply. In 1897, he spent six months studying in Edinburgh, Scotland, where he passed the Triple Qualification Board tests, which granted him the degrees of Licentiate Royal College of Physicians, Member Royal College of Surgeons of Edinburgh and Licentiate Royal Faculty of Glasgow, and also placed him on the British Registry for practice. During this same period abroad, he attended the twelfth International Medical Congress at Moscow as delegate.

The *Journal of Iowa State Medical Society* tells an illuminating anecdote of his early years: "In 1893 an event occurred which distinctly extended his influence and reputation as a surgeon. The cyclone at Pomeroy, Iowa, in the late summer brought death and destruction to that town, and 160 persons were injured. The many physicians who were hurried to the scene chose Dr. Jepson as chief surgeon, which was a high recognition of his organizing and surgical ability, particularly since he was then only thirty years of age. A grateful community expressed its appreciation in the form of a beautiful watch which he always regarded as one of his prized possessions."

Dr. Jepson was born in Aarhus, Denmark, educated at the University of Iowa and Jefferson Medical College. He held graduate and honorary degrees from several other colleges and universities. He also served as officer in a number of local and regional medical and surgical organizations and held a commission in the Army Medical Corps during World War I, serving on the Mexican border and elsewhere. At the time of his death, he was the oldest living member of the Western Surgical Association, as well as the oldest living past-president of the Iowa State Medical Society.

Dr. Walter L. Bierring says of him: "His success in the practice of surgery was largely due to his fundamental knowledge of anatomy, physiology, and pathology in their application to surgical diagnosis, combined with daring and skilful operative technic, yet his happiest moments were when he could lead a patient back to health without the need for surgery."

RALPH CHARLES MATSON, M.D., F.A.C.P., F.A.C.S., F.I.C.S.



The medical profession in the western part of the United States in particular and the medical world in general suffered a serious loss, in the death, on October 26, 1945, of Dr. Ralph Matson, at the age of 68. Dr. Matson was known both here and abroad, for his outstanding work in thoracic surgery and the treatment of tuberculosis.

Though born in Pennsylvania, Dr. Matson was truly a product of the Pacific Northwest, having graduated from the University of Oregon Medical School (1902) and served his interneship at the Seattle General Hospital. Thereafter he studied abroad at London and Cambridge in England, at Vienna, at Düsseldorf and Berlin and in Paris. He was always primarily interested in diseases of the chest, and devoted much of the latter part of his life to the American College of Chest Physicians, of which he served two terms as president. He also held the unique distinction of being a Fellow both of the American College of Physicians and of the American College of Surgeons. At the time of his death he held the honor of being Senior Member of the American Association of Thoracic Surgery. He served during World War I in the Medical Corps of both Great Britain and the United States, successively.

He was one of the early members of the International College of Surgeons, having received his diploma of Fellowship on December 3, 1937. At one time he served as National Regent for Thoracic Surgery, and was also Vice-President of the United States Chapter of the International College.

His work as both teacher and writer was extensive, and he travelled widely both in search of additional knowledge for himself, and in the interests of the speciality he had elected. The benefits of both his travels and his teaching will live long in the profession.

FREDERICK WALTER MINTY, M.D., F.A.C.S., F.I.C.S.

Dr. Frederick W. Minty, of Rapid City, South Dakota, died suddenly, following a heart attack, at his home on Saturday, November 24, 1945, at the age of 63. The son of an English Methodist Episcopal clergyman, Dr. Minty and his family were well known in many fields of endeavor in the Black Hills area beside medicine. In his younger days, he was active in sports and in music. He was also interested in photography and in aviation, owning his own plane for a number of years.

Dr. Minty received his medical degree from Sioux City College of Medicine in 1904, and specialized in surgery during most of his professional life. His son, Dr. Earl Minty, is in practice in Duluth, Minnesota.

JOHN HERBERT BLISS, M.D., F.A.C.S., F.I.C.S.

Dr. J. Herbert Bliss, of Brooklyn, New York, and Lakeville, Connecticut, died on October 1, 1945, at the age of 52.

Born and educated in Clyde, New York, Dr. Bliss received his medical degree from the College of Physicians and Surgeons of Columbia University in 1921, and a Master's degree from the Columbia Graduate School the next year. He held a post-graduate fellowship in Surgery at the Mayo Foundation for Medical Education and Research, Rochester, Minnesota, from 1923 to 1929, prior to which he had served his interneship at Methodist Hospital in Brooklyn, New York. Following his service at Rochester, he became Chief Surgeon for the Methodist Hospital Surgical Dispensory, which position he held for the rest of his life. He was also instructor in Surgery to the Nurses' Training School of the same institution.

In addition to his affiliation with the American and International Colleges of Surgery, he also belonged, among others, to the American Association of Railway Surgeons, the Associated Physicians of Long Island, the Radiologist Society of North America and the New York Academy of Medicine.

(Continued on page 287)

News Notes

"THE WAR'S DESOLATION"

A recent letter from the editor of the "Journal" of the Philippine Medical Association, requesting resumption of exchange with this "Journal" reads, in part, as follows:

"It is with profound regret that we inform you that our library had been completely burned by the ruthless enemy. The Philippines had suffered so much—its principal medical institutions (it is painful to state) had been so utterly destroyed, that unless America and the other United Nations extend to us their helping hands we would not be able to rebuild them.

"We suspended the publication of *The Journal* after the December 1941 issue, the Philippines being occupied by the Japanese January 1942, so the enemy would not be able to use it for propaganda. . . . We had been completely isolated from scientific world during 1942–1944; and you can understand how thirsty we are for new medical knowledge."

The Army Medical Library—John F. Fulton, M.D., president of the Honorary Consultants to the Army Medical Library, Washington, reports, regarding the present expansion program planned for that invaluable institution, as follows: "As you may know, at the outbreak of the war hearings were in progress before a Committee in Congress, advocating a new Army Medical Library building to be erected at a cost not exceeding $4,750,000. These hearings were terminated during the war and are about to be resumed sometime in April. . . ." He asks if "you will help the Army Medical Library by giving wide publicity to the coming hearings before the Budget and Congressional Committees which will determine whether a new building will be erected on Capitol Hill to house the greatest collection of medical books in the world. On account of increased costs. . . . Congress is now asked for $10,000,000. . . .

"It is impossible longer to carry on in the present building which was built in 1887. The need for a new building has never been disputed, but unless the medical profession rallies to the aid of this vital project, which has been solidly backed by men such as William Welch and Harvey Cushing, it is possible that the laws will not be amended to provide a proper building which will enable the Library to furnish service to the medical profession throughout the country and to many parts of the world."

Dr. Welch, in his lifetime, had this to say about the Army Medical Library, "I have been asked on more than one occasion what have been the really great contributions of this country to medical knowledge. I have given the subject some thought and believe that four should be named: (1) the discovery of anesthesia; (2) the discovery of insect transmission of disease; (3) the development of the modern public health laboratory in all that the term implies; (4) the Army Medical Library and its Index-Catalogue. *This library and its catalogue are the most important of the four.*"

The value of this Library and its related services is incalculable. That it should be inadequately housed and equipped for want of appreciation and support from the medical profession throughout the world—and especially in the United States—is unthinkable. All possible pressure should be brought to bear on Congress to pass all of the necessary legislation immediately. This *must* become the personal concern of every individual medical man, for "every one makes one"—no voice is too small or humble to be of value. Make yours heard, *now!*

German Ideas Haven't Changed!—Science Magazine reports with appropriate gusto, that, at a meeting last summer of the German Society of Anthropology, Dr. Waldeyer of Berlin, reasserted the idea, so carefully fostered under the Nazis, that woman is literally, physically and mentally, inferior to man, that her training should aim only toward fitting her for duties within the home. *Will they never learn?*

New Journals.—Announcement is made of a new quarterly "Journal of the History of Medicine and Allied Sciences", to be published by Henry Schuman, 20 East 70th Street, New York City 21. The editor is Dr. George Rosen.

Also announced recently, is a new journal to appear about July of this year, to be entitled *"Journal of Plastic and Reconstructive Surgery"*. It will be the official organ of the American Society of Plastic and Reconstructive Surgery. It is to be published bi-monthly by Williams and Wilkins, Baltimore.

Sixty Years of Service.—Max Einhorn, M.D., F.I.C.S., was honored by a reception tendered him by the staff of Lenox Hill Hospital, New York City, on last November 28th, held in the Einhorn Auditorium, a building he, himself, presented to the hospital in 1938. The event was in recognition of sixty years of service to the hospital. An engrossed resolution was presented to him by the board of trustees.

Memento of Edward Jenner.—The Vancouver Medical Association Library has recently acquired through a gift an original letter signed by Edward Jenner, in which the great pioneer makes specific mention of vaccination.

Second South American Congress on Neurosurgery.—Announcement is made of the forthcoming Second South American Congress on Neurosurgery to be held in Santiago, Chile, in April 1947. Dr. Alfonso Asenjo, in giving the first details of the meeting, states that there will be three discussion groups, (1) Hydrocephalus, (2) Histology in Brain Tumors in Relation to Clinical Findings, and (3) Brain Abscess. He also says, "We expect to be honored at this meeting by the presence of neurosurgeons from all over the world with the object of organizing the future International Congresses which could be held at five-year intervals in different countries." Enquiries should be addressed to Dr. Alfonso Asenjo, Secretario General del Comité Ejecutivo y Director del Instituto Central de Neurocirugía, Pabellón Cushing, Santiago, Chile.

(Continued from page 285)

Dr. Bliss made a number of valuable contributions to the literature on carcinoma and related conditions, his particular interest having been in the combination of surgery with radiation therapy.

He received his degree and diploma of Fellowship in the International College of Surgeons at Philadelphia, October 4, 1944, just one year before his death. That he should have been removed so untimely is a source of genuine sorrow to those who knew him and valued his unassuming devotion to his chosen calling.

NEW BOOKS

In *Modern Methods of Amputation*[1] by *Edmundo Vasconcelos,* the general surgeon will find an excellent handbook for practical use. In his foreword, the author says, "There are many studies of these (amputation) techniques available in books and in specialized articles. A general review of all of these was needed in order to weed out the so-called old-fashioned 'gallery techniques', or the purely academical operations which have no clinical value. Through the great experiences gained in the last war, our knowledge of this chapter of surgery has been revised and" it has been learned "that rehabilitation for work and social adjustment is impossible unless a well studied and perfectly fitted prosthesis can be obtained."

It is on the basis of these two stated observations that the book has been planned and constructed. The opening chapter deals with general considerations, including optimum levels for amputations with reference to the mentality and occupation of the patent as well as purely physical considerations. The second and third chapters cover general principles and indications. Two chapters are devoted to detailed descriptions of technics for the upper and lower extremities respectively, with a final section on prostheses. An exhaustive bibliography is appended.

The illustrations, which are numerous, are, with a few unimportant exceptions, line drawings done by José Goncalves Filho. Their detailed character makes them much clearer than photographs; their arrangement, showing, in most instances, each step of the operation, constitutes a complete lesson even without the accompanying text material.

General Kirk's introduction entitled, "The Development of Amputation", is in itself a valuable addition to medical literature, giving a brief but lucid account of the entire history of amputation, down to very recent times. He goes into particular detail regarding the amputations performed by military surgeons, on the field of battle or in army hospitals during the last one hundred and fifty years. This portion of the text is illustrated with several antique drawings of marked historic interest.

One of the most beautiful books that has ever come across this reviewer's desk is *Men Without Guns, The Story of Army Medicine,*[2] by *DeWitt Mackenzie.* Here, in a large quarto volume, are collected magnificent, full-color reproductions of the work of a score or more of America's finest contemporary painters, who, as accredited war correspondents, covered every theatre of World War II. The originals are a part of the Abbott Collection of Paintings, now owned by the United States Government.

With a vividness no written word or photograph could possibly equal, there is spread out every phase of the work of the Army Medical Corps, from the scrubbing of bloody stretchers on a palm-bordered beach to the distinctly humorous aspect of an ingenious device for the splinting of a fractured maxilla. The mud and filth, the patient suffering of the wounded, the unquestioning courage of the unarmed corpmen, the incongruity of location of hospitals and dressing stations, the skill, resourcefulness and inhuman endurance of surgeons and nurses, all are represented with honesty and simplicity that point with pride, yet shun maudlin heroics.

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[1] Modern Methods of Amputation. Edmundo Vasconcelos, Professor, University of São Pãulo. With an Introductory Survey of The Development of Amputation by Maj. Gen. Norman T. Kirk, M.C., Surgeon General, U. S. Army. 253 pp., 262 illustrations. The Philosophical Library of New York, Department of War Medicine, New York. Price $10.00.

[2] Men Without Guns, The Story of Army Medicine, by DeWitt Mackenzie, with a foreword by Maj. Gen. Norman T. Kirk, Surgeon General of United States Army. Illustrated with 137 plates, 118 in full color, from Abbott Collection of Paintings owned by the United States Government. The Blakiston Co., Philadelphia, 1945. Price $5.00.

Some of the pictures, including the frontispiece, "The Man Without a Gun," have previously been published in "Life" magazine. To those who have seen them there, little more need be said.

The text material is keyed to the pace of the pictures, brief, concise and to-the-point. A word sketch of each artist, with a small photograph, is included in the opening chapter; the balance is a sort of running commentary to tie the illustrations together and give a little of the background.

The appeal of this book is widespread; the physician, the medical artist, the student of contemporary painting, the modern historian, will each find rich rewards within its covers. And all this for little more than the price of a single romantic novel!

In the introduction to his *General and Plastic Surgery*,[3] *Dr. Eastman Sheehan*, says, in part, "In World War II, as in its predecessors, medical necessity has again proved itself the mother of invention. The development of new (medical and) surgical technies to save life and remove deformity and disability, has written a brilliant new chapter in the treatment of trauma."

Dr. Sheehan's experience in the type of work treated in this book was gained in large part from personal contact with war injuries in Spain and in England. He speaks glowingly of his associates on both sides of the Atlantic, and has freely and frankly drawn upon these contacts for many of his procedures, as well as the pictures to illustrate them.

In separate chapters, extensively subdivided, the author covers nearly every conceivable species of traumatic injury, including blast, burns, stab wounds, bullet and other missile wounds, and the infections and other sequellae that follow them. The final section is concerned with standard operations for repair. Although Dr. Sheehan, was, naturally, chiefly concerned with war injuries, much of the material included applies equally well to industrial and traffic accidents, and their resultant trauma. Equally, much of the material is applicable to congenital malformations, such as harelip. An extensive section on prostheses is included in the chapter on injuries to the extremities.

Illustrations are very numerous, every step of each procedure being shown, usually in simple line drawings, which gain, rather than lose clarity, from their lack of "artistic" detail. The one shortcoming of the book is the fact that the photographs are not of a quality to compare with the drawings; being small, grainy and lacking in essential detail in some cases. This is not too serious, however, as they are used to show general problems and results, rather than actual procedures.

In physical format, the book is pleasing, with clear, black type and short paragraphs, nearly every one of which has a brief, succinct sub-heading, making for quick and easy reference. Extensive bibliographies are placed at the end of each chapter. The subject index, while adequate, might perhaps, have profitably been somewhat more detailed.

The appeal of this book is wide, being equally to the general and to the plastic surgeon, as well as to the physician who also has occasion to do some surgical procedures in connection with his medical practice. In fact, it is, perhaps, to this last group that it would be most valuable, as a work of reference, especially in these days, when so many war casualties are returning to civilian life, made whole by the service medical departments, but still needing some—or occasionally, much—additional functional and plastic repair for economic and cosmetic reasons.

Modern medical science is beginning to realize that the various processes which go on in the human body are, even if no less wonderful, certainly less mysterious, than was formerly believed. There is a definite reason for each physical and chemical change; these changes follow fixed rules, the same rules that govern similar processes in other types of structures, living or inert.

[3] General and Plastic Surgery, with Emphasis on War Injuries. J. Eastman Sheehan, M.D. Paul B. Hoeber, Inc., New York, 1945. Price $6.75.

It is with these, no-longer wholly mysterious processes that *Rudolf Höber's*[4] new text, *Physical Chemistry of Cells and Tissues,* is concerned. In his introduction, Dr. Höber has this to say of his work: "This book has grown to its present state . . . during more than three years of war. . . . Its outlines may appear to comprise a well-defined entity. . . . Many a wound and many a defect have not abolished the integrity of the basic idea. The subject of the book . . . is 'physiology from below,' not originated to fill human needs . . . but as a branch of physical chemical science dealing with life as a physical, though exceedingly complex system. . . . During the last four decades . . . chemistry has more and more become a branch of physics."

This book is not for the casual student, nor for the busy general practitioner; rather its appeal is to the serious researcher who intends to go, whole-heartedly and deeply, into underlying causes, in the laboratory. It is all "solid meat" throughout its 676 pages of closely-spaced, small, black print. Questions, often startlingly thought-provoking, are asked, or subjects for discussion set up, in numbered, bold-faced side-heads; each of these is followed by a thorough discussion of the subject. The text is exhaustively annotated; bibliography is placed at the bottom of every page, making for quick, easy reference. Illustrations are mostly graphs and tables, bearing closely on the adjacent text, and schematic diagrams of physical and chemical relations.

Separate indices by author and subject are included, as well as an extremely detailed table of contents. A brief introduction entitled "Selected Principles of Physical Chemistry" by David I. Hitchcock, together with a list of related texts, precedes the first chapter.

The general practitioner has almost daily contact, in his consulting room, with women patients suffering from a multiplicity of "female troubles" which, though very bothersome to the victim, are oftentimes easily dealt with by simple, routine procedures. It is with this type of problem that *Margaret Moore White,*[5] in her *Symptomatic Diagnosis and Treatment of Gynaecological Disorders,* is primarily concerned.

Miss White's small handbook is well designed to fulfill its avowed purpose. Her wide experience in general practice and in clinics has given her a breadth of vision that enables her to put first things first and lay emphasis where it is most needed. In brief paragraphs, each with an identifying bold-face head, the author has covered practically every commonly-encountered problem in the gynecological field. These in turn, are, in one direction, subdivided by italic side-heads, and in the other, grouped in numbered sections, by various logical methods of classification.

One digression from the usual style of reference texts should be noted with approval. Descriptions of rare or less frequently encountered conditions, are printed in smaller type—an example of the aforementioned matter of emphasis. This is one of several improvements introduced in this, the second edition of the work.

The illustrations vary in type and style to match individual requirements and are adequate and clear. They included line drawings of various kinds, charts and graphs, and photographs and roentgenograms, all well reproduced and of fair size within the limitations of a small page.

Altogether this is a worth-while addition to the literature of gynecology and will probably find itself more frequently used by the busy doctor than many more pretentious volumes.

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[4] Physical Chemistry of Cells and Tissues. Rudolf Höber and others. The Blakiston Co., Philadelphia, 1945. Illustrated. Price $9.00.

[5] The Symptomatic Diagnosis and Treatment of Gynaecological Disorders. Margaret Moore White, M.D. (Lond.), F.R.C.S. (Eng.), M.R.C.O.G. Foreword by F. J. Browne, M.D. (Aberd.), D.Sc., F.R.C.S. (Edin.), F.R.C.O.G. 2nd Ed. 108 Illustrations. H. K. Lewis & Co., Ltd., London, 1946. Price 16s.

(Further details regarding this work may be gained by reference to the review of the first edition, which appeared in this *Journal* in March–April, 1945.)

Sección en Español

Nuevos Conceptos Sobre La Patogenia Del Adenoma Prostático

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EN el siglo pasado Mercier, Civiale, Velpeaud, Leroy D'Etoiles, consideraban al adenoma como una hipertrofia en masa de la glándula.

Launois, creía que la arterioesclerosis era en realidad la iniciación del adenoma. Ciechanovsky y Rotchil fueron partidarios de la teoría inflamatoria; teorías todas que tuvieron su apogeo, pero que no resistieron a los más mínimos embates, por lo que fueron abandonadas.

En los comienzos de este siglo, Albarrán, Hallée, Perearneau, Motz, expusieron una teoría patogénica, ya preconizada por Rochitansky en 1881, en la cual desarrollaban la hipótesis de que el adenoma tenía lugar en la glándulas llamadas periuretrales, colocadas por debajo de la mucosa uretral dentro del esfínter del cuello y que, con su desarrollo, producían el llamado adenoma.

Estas teorías fueron defendidas por Tandler y Zuckerkandl; tan convencidos estaban los autores europeos, que Papin y Verliac aconsejaron llamar a esta afección, adenoma de la uretra posterior, en lugar de adenoma prostático, queriendo con esto separar categoricamente a la próstata de la producción adenomatosa que creían no pertenecer a ella. Con el concepto de la teoría periuretral del adenoma de próstata hemos permanecido hasta ahora.

Ultimamente Randall en un detenido examen del lóbulo mediano llama la atención de que no sólo las glándulas periuretrales se pueden hipertrofiar, sino que también los elementos glandulares preespermáticos pueden desarrollarse en forma adenomatosa.

Reischauer y Deming y Wolff, por otra parte, afirman que no es el adenoma lo que primeramente se forma, sino numerosos pequeños tumores fibromusculares que toman asiento en la pared posterior de la uretra, comparándolos a los fibromas de útero y atribuyéndolos a similar origen Mülleriano. Estos autores dicen que la presencia de tales tumores fibromusculares excitarían la proliferación de las glándulas vecinas, especialmente periuretrales que serían englobadas por los mismos procesos fibrosos neoformados. En Francia, Cúneo ha expuesto ante la Academia de Medicina de París una nueva teoría similar en cierto modo a la de Moskowicz sobre el adenoma, atribuyendo este proceso a la hiperplasia glandular de los elementos situados alrededor del utrículo y afirmando que todos los adenomas se desarrollaban en ese sitio.

No entraremos a rebatir los argumentos de unos y otros autores ya que no es aquí el sitio apropiado. Es indudable que todas estas hipótesis tienen algo de cierto y no se deben tomar individualmente como categóricas.

La opinión de Albarrán y Motz es de indudable valor; existen en efecto adenomas desarrollados dentro de la musculatura, lóbulos medios de glándulas lamadas periuretrales, pero también

existen adenomas desarrollados en cualquier zona de la próstata, interviniendo cualquier parte de la glándula en la producción de estas formaciones patógenas. Y si extremamos la lógica veremos también que dichas glándulas periuretrales son tales por la situación en que se encuentran, pero son prostáticas por naturaleza. Son glándulas en latencia y en potencia cuyo desarrollo más o menos tardío pue de explicarse por estímulos de origen endocrino que ya hemos analizado oportunamente.

Para ser más explícitos veamos como se desarrolla la próstata y con ello demostrar que las glándulas llamadas periuretrales de uretra posterior deben considerarse como prostáticas. Por otra parte, el mismo desarrollo adenomatoso en ese sitio nos indica que no son glándulas que puedan asemejarse en ningún momento a las glándulas periuretrales. Embriologicamente considerada, la región prostática en un embrión humano de 32 mm. presenta por arriba y abajo de la desembocadura de los tubos de Müller y Wolff, dos zonas de mesénquima cuyas células están perfectamente conglomeradas que rodean por así decir, al tubérculo genital. De más está decir que es en la pared posterior del seno uro-genital en donde se acomodan estos elementos del mesénquima. Recordaremos de paso que la zona situada entre los uréteres y conductos de Wolff representa la única inclusión mesenquimal en el seno uro-genital derivado de la alantoides y que, por lo tanto, este seno es de origen netamente entodérmico, quiero decir con esto que es unicamente la pared posterior del seno uro-genital dentro de la zona compuesta por los uréteres y los conductos de Wolff, en donde van a producirse los elementos prostáticos derivados directamente del mesénquima; la pared superior, como ya dije, que es de origen entodérmico, producirá también glándulas, pero veremos como evolucionarán de una manera completamente distinta.

En cuanto al hecho de que la producsión glandular pueda tomar nacimiento en la mucosa o en el mesénquima tiene interés relativo. Lo evidente es que se desarrolla siempre en una parte determinada con tubos glandulares que se sitúan alrededor de los conductos mesonéfricos y siempre en la pared inferior del seno uro-genital.

Estos elementos glandulares nacidos en la pared inferior son los verdaderos elementos prostáticos. Los nacidos en la pared superior del seno uro-genital se pueden considerar periuretrales y se atrofian formando la comisura anterior del adulto, lo que confirma su origen embriológico distinto.

Al observar el estado de la uretra posterior en un feto de cuatro meses podemos ver al tubérculo de Müller perfectamente saliente en la luz uretral, en donde desemboca el utrículo y a ambos lados los conductos Wolffianos. Los elementos glandulares prostáticos están perfectamente diferenciados permitiéndose observar como orientan su eje mayor hacia la pared posterior de la uretra. Hay todavía en el embrión de esta edad elementos glandulares en la pared superior; estos elementos no tienen nada que ver con los elementos que se desarrollan en la pared inferior cuyas glándulas van diferenciándose, arracimándose y adquiriendo poco a poco la forma que le corresponde.

La próstata de un niño de 5 meses muestra el complejo glandular colocado evidentemente en la pared posterior de la uretra por delante de los conductos eyaculadores rodeando a éstos y desarrollándose también hacia la parte más inferior por detrás de ellos. Ya en el niño de 5 meses no existen glándulas periuretrales en la pared superior, se han atrofiado completamente. Las glán-

dulas prostáticas al parecer se acomodan por lóbulos, están separadas por tejido conjuntivo muscular de fibras lisas. Además comienzan a mostrarse otras formas glandulares, que se interponen entre los conductos eyaculadores y que toman nacimiento en el utrículo prostático. Estas glándulas según Vimtembergen se cree que son comparables a las glándulas de coagulación de los roedores. Además, con el desarrollo podemes ver que ya en el niño de 9 años existen en la pared posterior de la uretra glándulas de las llamadas periuretrales, desarrolladas por dentro del múscelo del cuello cuyos caracteres son muy similares a los de las glándulas prostáticas embrionarias.

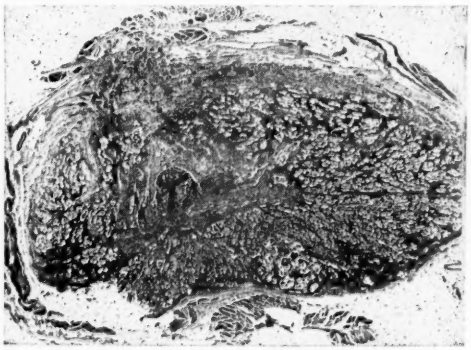

Fig. 1. Corte transversal de próstata a la altura del verumontanun, de un hombre de 25 años de edad. Obsérvese en el lóbulo posterior un nódulo adenomatoso.

La próstata sigue su crecimiento de acuerdo a las leyes embrionarias que la rigen y podemos ver en el adolescente cuando se hacen cortes seriados, verdaderas secciones topográficas transversales tomadas a distintas alturas que, a nivel del cuello vesical se distingue el músculo del cuello en forma nítida con algunas pequeñas glandulitas en la mucosa. La próstata está colocada por detrás del músculo del cuello y por delante de los conductos eyaculadores para formar un corte más inferior todavía, a la altura del veru-montanun. Podremos distinguir, además, la cavidad del utrículo rodeado por tejido muscular y con glándulas dentro de él.

Es perfectamente visible la división de la próstata en distintos lóbulos de acuerdo a su origen embriológico, que

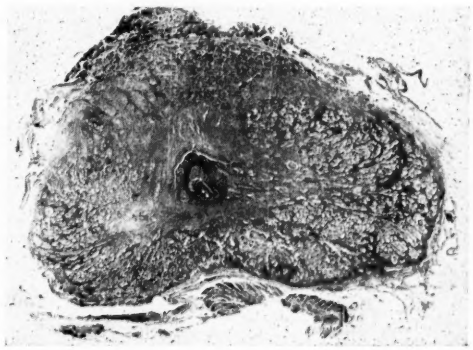

Fig. 2. Corte transversal de próstata a la altura del veru-montanun, de un hombre de 52 años. Puede observarse, diseminados en toda la glándula, pequeños acinis en vías de degeneración adenomatosa, con cuerpos amiláceos en su interior.

debe terminar en un complejo glandular formado por múltiples lóbulos cada uno de ellos separado por una red conjuntivo-muscular dividiendo, por así decir, a la próstata en compartimentos de distinto tamaño y situación.

Alcanzada la edad adulta, la próstata permanece en estado estacionario en cuanto a tamaño, pero ya puede comenzar a sufrir procesos alterativos. En la preparación perteneciente a un hombre de 25 años que ha alcanzado su estado más activo, goza de todas las características estructurales que tienen estos elementos. Sin embargo, podemos ver fenómenos patológicos en la glándula que a pesar de tener tan sólo 25 años de edad ha desarrollado en su lóbulo posterior, por detrás de los conductos eyaculadores, un proceso adenomatoso limitado y perfectamente evidente (Figura 1).

Estas pequeñas alteraciones de la

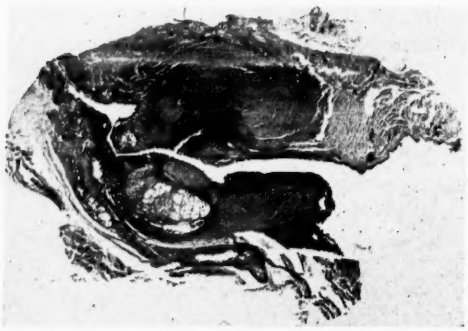

Fig. 3. Corte longitudinal de la uretra posterior y de la próstata. Obsérvese en el medio de la luz uretral, abajo la vesícula seminal y el conducto deferente que vá a desembocar en el veru-montanun. Por arriba y abajo del deferente hay glándulas prostáticas que en este último lado presentan una manifiesta degeneración adenomatosa quística.

próstata son posibles de encontrar en todas las glándulas adultas, pudiendo ser atribuídas a obstrucciones localizadas en sus canales excretores o a procesos realmente hiperplásicos abortivos. Siguiendo con la objetivación de estos elementos podremos ver la preparación correspondiente a un hombre de 52 años, un corte a la altura del veru-montanun donde se observa el utrículo, alrededor del cual hay una espesa capa de tejido muscular que lo rodea y que nos pone en guardia con respecto a la teoría de Cúneo formulada en estos últimos tiempos; este tejido muscular sería una verdadera barrera hacia la hipotética proliferación adenomatosa de las glándulas utriculares, que, por otra parte, alterarían inmediatamente la imagen endoscópica del veru-montanun, cosa que nunca sucede en los adenomas de la próstata; podemos ver también en esta próstata, practicamente uno de los momentos de la iniciación del futuro adenoma; hay pequeños focos diseminados en todo el parénquima cuya dilatación glándular podría ser causa primera para que más adelante se desarrolle un adenoma (Figura 2).

En algunas otras preparaciones y en especial una perteneciente a un hombre de 48 años (Figura 3), existen verdaderos adenomas en la parte supramontanal de la próstata; adenomas que no son de las glándulas llamadas periuretrales o subcervicales sino que son verdaderos adenomas de la parte preespermática de la próstata.

En casi todas las preparaciones podemos ver como poco a poco se fragua

Fig. 4. Corte longitudinal de la próstata de un hombre de 55 años de edad, donde puede observarse una próstata atrófica, pero presentando glándulas prostáticas submucosas en la pared inferior, mal llamadas periuretrales.

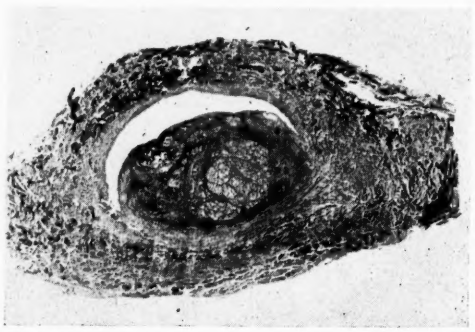

Fig. 5. Corte transversal de próstata. Pequeño adenoma de las glándulas prostáticas periuretrales que rechaza hacia abajo al músculo del cuello.

la cápsula delimitante al futuro adenoma patológico que permitirá enuclearlo sin producir grandes traumas en la glándula. Podemos ver también como el adenoma que con su crecimiento vá rechazando a la glándula se rodea, a

su vez, de tejido conjuntivo haciendo una verdadera cápsula al tumor adenomatoso, separando a la próstata aparentemente normal de esta nueva próstata hiperplasiada. Es la defensa de la naturaleza contra el proceso patológico; en el comienzo, el músculo del cuello permanece inalterado.

Dijimos que el punto de proliferación adenomatosa puede radicar en cualquier sitio de la próstata; hemos visto en una próstata de un hombre de 25 años como había puntos evidentemente patológicos en el lóbulo posterior prostático cuyas características podríamos llamar de iniciación. La producción adenomatosa podemos encontrarla en los lóbulos laterales, en la porción preespermática de la próstata, en el tejido submucoso de la pared posterior de la uretra, pero es indudable que predomina en la zona preespermática.

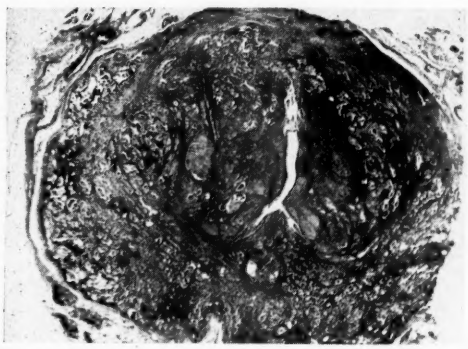

Fig. 6. Corte transversal de próstata. Múltiples fibromas y fibroadanomas localizados algunos en la periuretra y otros en pleno parénquima glandular por fuera de la musculatura del cuello.

Estos focos adenomatosos múltiples van desarrollandose lentamente y rechazan paulatinamente al tejido noble preestablecido haciéndose una verdadera caparazón fibro-conjuntiva-glandular.

Nos llamará la atención, y ello es la preocupación de todos los investigadores que han detallado la proliferación adenomatosa en zonas especiales de la próstata, el hecho de que el lóbulo posterior prostático siempre se encuentra rechazado cuando hay algún tumor adenomatoso.

Ante la evidencia de los hechos comentados más arriba, que tienen indudablemente sus procesos proliferativos de comienzo en cualquier parte de la

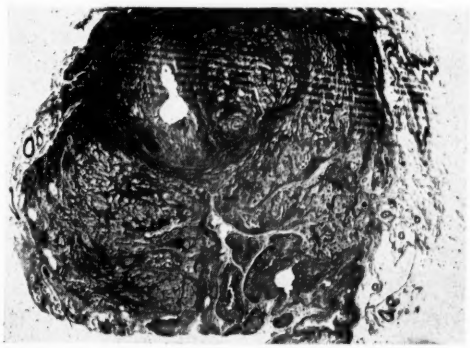

Fig. 7. Corte transversal de próstata. Nódulos adenomatosos localizados por fuera de la musculatura del cuello, en la pared lateral de la próstata.

próstata, nos preguntamos también, porqué, si hemos encontrado repetidas veces adenomas de comienzo en la porción retroespermática de la próstata, es tan poco frecuente que en las intervenciones nos encontremos con adenomas colocados por detrás o debajo del veru-montanun?

La explicación creo que no es dificil. Consideremos la próstata como una glándula encarcelada dentro de un cubo que la rodea por 5 costados estando abierta su cara superior, y tendremos así a la próstata limitada, a los lados por los ligamentos sacropúbicos; por debajo por el diafragma perineal; por delante por el pubis y por detrás por la aponeurosis de Denonvilliers, ésta es la parte más elástica de las que hemos mencionado; queda pues la próstata libre por la pared superior incluyendo dentro de la superior a la uretral. Toda proliferación adenomatosa tenderá a hacerse hacia la uretra, vejiga o bien

empujará a la aponeurosis de Denonvilliers, en lo que ésta sea de extensible. Otra conjetura debemos hacer además. La próstata es un organo practicamente dividido en dos secciones; una preespermática y la otra retroespermática, siendo la zona divisoria la establecida por los conductos eyaculadores en su marcha hacia la uretra. Como podemos ver en las microfotografías adjuntas y colegir del estudio de la embriología, estos conductos forman una verdadera brida resistente a concavidad superior, dividiendo a la glándula a su vez en dos partes; una, la superior que puede

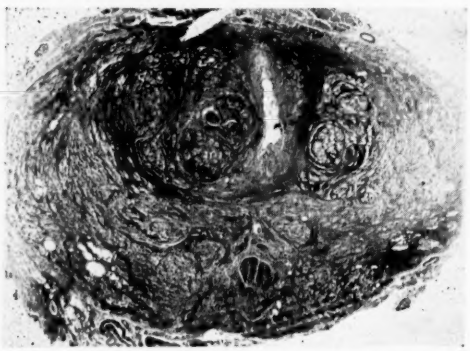

Fig. 8. Corte transversal de próstata a la altura del cuello vesical. Pueden observarse en este corte nódulos adenomatosos, fibroadenomatosos y adenomas quísticos localizados en distintos puntos de la glándula, ya sea por dentro del músculo del cuello, por fuera de él y en el lóbulo anterior prostático.

soportar una gran hiperplasia adenomatosa puesto que no tiene impedimento su desarrollo y conseguirá extenderse hacia vejiga o uretra, y otra, la inferior, cuya proliferación adenomatosa está immediatamente detenida por el aprisionamiento que le hacen las paredes que la rodean. Cualquier proliferación más grande de lo que puedan soportar las paredes laterales repercutirá indudablemente sobre la vascularización de dicha zona, comprimiendo los vasos arteriales o venosos y dificultando de esa manera el metabolismo celular de esa parte de la próstata, llevando como resultado a la atrofia del foco adenomatoso neoformado, favoreciendo, además, el rechazo del lóbulo posterior por los adenomas o llamémosle por la prostatopatía adenomatosa preespermática.

Y así vemos, en la preparación (Figura 3) correspondiente a un hombre de 48 años, un verdadero adenoma preespermático rechazando hacia abajo a los conductos eyaculadores y vesículas seminales: adenoma situado lejos de las glándulas llamadas subcervicales y también lejos de la musculatura del cuello.

Es indudable que estos adenomas con su crecimiento irán a hacer su salida hacia la uretra posterior, rechazando hacia atrás a la musculatura lisa del cuello vesical.

En otra preparación correspondiente a un hombre de 55 años (Figura 4) nos es dable ver como a pesar de una próstata atrófica existen glándulas llamadas periuretrales, pero que para nosotros son glándulas prostáticas de desarrollo tardío, sin características patológicas que nos hagan pensar en el adenoma.

En cambio, en otra preparación (Figura 5), podemos ver un pequeño adenoma de estas mismas glándulas que con su crecimiento rechazará al músculo del cuello hacia abajo, produciendo las alteraciones máximas que puede producir el adenoma de próstata.

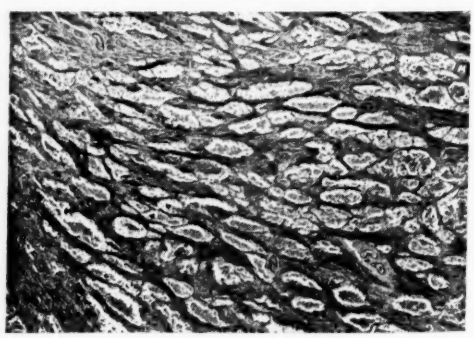

Fig. 9. Parte de glándula normal de la Fig. 3.

Más demostrativa podría ser la preparación de la Figura 6, por tratarse de un hombre de 49 años en guien se ha producido un fibroma radicado especialmente en la parte inferior de las paredes de la uretra, en donde puede verse también algunas zonas fibroadenomatosas en pleno parénquima prostático.

La limitación de estos procesos patológicos en la zona periuretral, y que nosotros llamaremos la zona de crecimiento tardío de las glándulas prostáticas, puede ser la predominante. Tenemos múltiples preparaciones donde se vé una limitación perfecta de estos procesos patológicos hecha por el músculo del cuello vesical con fibras algunas veces capaces de contraerse y relajarse.

Queremos recalcar que el adenoma de próstata no es patrimonio exclusivo de al zona periuretral, como hemos visto más adelante, ni del lóbulo posterior,

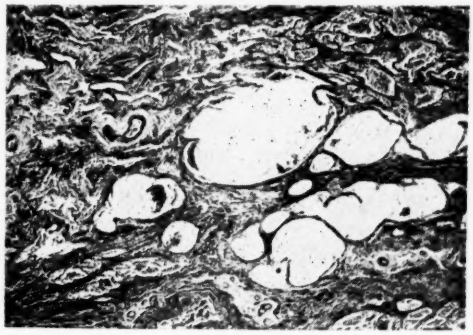

Fig. 10. Zona de adenoma quístico perteneciente a la Fig. 8.

como vimos más arriba, sino que puede desarrollarse en cualquier parte de la próstata y así en la Figura 7 es dable ver un franco núcleo adenomatoso situado por fuera de la musculatura cervical y rechazando a éste hacia adentro.

Estas imágenes se repiten infinidad de veces. Todas estas transformaciones adenomatosas situadas en diferentes partes de la glándula pueden presentarse concomitantemente como por

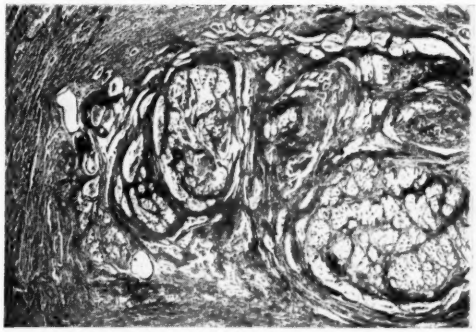

Fig. 11. Zona de adenoma común perteneciente a la Fig. 8.

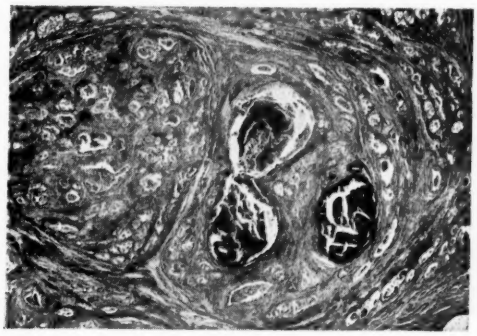

Fig. 12. Zona de fibroadenoma perteneciente a la Fig. 8.

ejemplo en la Figura 8, donde se puede ver un adenoma lateral situado por fuera de la musculatura del cuello y algunas zonas con tendencia adenomatosa en lo que es el lóbulo posterior.

Vimos más arriba cuales eran los límites de la próstata que la defendían contra la proliferación excéntrica regular hacia todos los sentidos y creemos ver de una manera evidente proqué generalmente predominan los adenomas preespermáticos.

Establecido el predominio absoluto de uno, dos o tres lóbulos adenomatosos preespermáticos es fácil comprender como ese tejido neoformado rechazará hacia abajo y atrás al remanente de la próstata, haciéndola aparecer como una cápsula especial. Algunos autores cre-

yeron ver en esta particularidad una neta diferenciación de la neoformación adenomatosa de la próstata verdadera, representada por el tejido noble desplazado por la proliferación patológica; a nuestro entender en cambio ese tipo de cápsula está formado no sólo por la próstata normal sino tambien por los pequeños focos adenomatosos prostáticos que se encuentran rechazados y atrofiados formando un todo con la glándula normal y el tejido conjuntivo periacinoso. Se forman de esta manera verdaderos tumores encapsulados, debiéndose ver en el predominio de las fibras conjuntivas que rodean a estos procesos adenomatosos, la defensa de la glándula que trata de aislarlos por ser una producción anómala en su seno.

CONCLUSIONES

Nuestra opinión acerca de la patogenia de la prostata está basada en los hechos que se desprenden de la observación de numerosas glándulas prostáticas de todas edades, en donde se ha podido sorprender a la degeneración adenomatosa desde los primeros comienzos hasta las ultimas etapas, pasando por todos los estados intermediarios.

Nuestro reseumen es el siguiente:

1º. En cualquier parte de la glándula peude desarrollarse un adenoma.

2º. Las llamadas glándulas periuretrales que radican en la pared inferior de la uretra retromontanal son verdaderas glándulas prostáticas en latencia que por estímulos probablemente hormonales se desarrollan durante todo el transcurso de la vida del individio de una manera ininterrumpida.

3º. El adenoma tiende tendencia a desarrollarse hacia vejiga y uretra por ser los únicos sitios que no ofrecen resistencia a su desarrollo.

4º. Por la causa antedicha la mayor parte de los adenomas que se desarrollan y que llegan al estado de verdadero tumor son preespermáticos.

5º. La cápsula periadenomatosa está formada no sólo por la próstata normal sino también por todos aquellos brotes adenomatosos que debido a la compresión ejercida por el adenoma que prevalece, son rechazados conjuntamente con la próstata remanente.

SUMMARY AND CONCLUSIONS

The author's conclusions on the pathogeny of adenoma of the prostate are based on observations resulting from the study of a great number of prostatic glands, on patients of all ages, in which adenomatous degeneration has been detected, ranging all the way from the earliest to the last stages.

He concludes that adenoma may develop in any portion of the gland, but will develop toward the bladder and urethra because these areas show no resistance to its growth. Owing to this fact, adenomas become pre-spermatic. The periadenomatous capsule contains not only the normal prostate, but all adenomatous nodules as well.

SOMMAIRE ET CONCLUSIONS

Les conclusions de l'auteur sur la pathogénie des adénomes de la prostate sont basées sur l'étude d'un grand nombre de glandes prostatiques. Ces glandes provenant de malades de différents âges prósentaient des signes de dégénération adénomateuse de différents degrès.

L'auteur nous dit que l'adénome peut se développer dans toute partie de la prostate, mais se développe vers la vessie urinaire et l'urèthe car la tumeur ne rencontre aucune résistance à son développement dans cette direction.

L'adénome devient pré-spermatique.

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IN MEMORIAM

PROF. ALBERTO GUTIERREZ, F.I.C.S. (ARGENTINA)

Ha transcurrido ya más de un año del fallecimiento del que fué ilustre Profesor Dr. Alberto Gutierrez, de Buenos Aires, pero el tiempo pasado no ha logrado borrar de la memoria de quienes le conocieron y admiraron el recuerdo de aquel gran hombre de ciencia que tanto contribuyó al desarrollo de la medicina y cirugía. Su desaparición, ocurrida el 26 de febrero de 1945, ha dejado en la medicina suramericana un puesto vacante, muy difícil de llenar.

El Dr. Gutierrez al fallecer contaba solamente 52 años de edad, pero sus aportaciones en el campo de la medicina le habían ya elevado a un puesto preeminente, no sólo en su patria sino en el extranjero. Entre sus trabajos figuran unas 300 obras de distinta índole, todas ellas de extraordinario interés científico. Citemos, como ejemplo, los dos tomos de sus lecciones de Clínica Quirúrgica. En 1941 publica su "Tratado de Clínica Quirúrgica," por desgracia sin terminar, como resultado de su experiencia personal tan brillante y fecunda.

Para difundir lo más posible los conocimientos sobre la experimentación médica, fundó el Dr. Gutierrez la "Revista de Cirugía de Buenos Aires" (1922) y la "Revista Argentina de Anestesia y Analgesia," órganos de expresión científica que tanto han influido en la enseñanza del arte de curar.

Desde el comienzo de su carrera se reveló este hombre como un científico destacado y su tesis sobre "Anatomía Topográfica del Peritoneo" mereció el premio de la Facultad cuando su autor tenía tan sólo 24 años, uno después de haberse graduado, precisamente en la Facultad que le otorga el premio.

Continuó sus estudios como Jefe de Trabajos Prácticos de Anatomía Topográfica y bien pronto ascendió a Profesor suplente de dicha asignatura. Trabajando en la Facultad llega a obtener la Docencia Libre y la Suplencia de la Cátedra de Clínica Quirúrgica. En el Hospital Español contribuye con sus conocimientos y su incansable labor al mejoramiento de dicha institución, y por su méritos alcanza el cargo de Jefe del Servicio de Curugía de Mujeres y Ginecología.

Sus actividades científicas y su profundo conocimiento le llevaron a ocupar numerosos cargos de prestigio, entre los que citaremos

los siguientes: Director de la Librería y Archivos de la Sociedad de Cirugía de Buenos Aires, Secretario y, más tarde, Presidente de la Sociedad Médica del Hospital Español, vice-Presidente de la Asociación Cultural Española y Director de la Clínica Quirúrgica Gutierrez.

Fué el Dr. Gutierrez miembro de una familia de médicos. Su padre, el eminente Dr. Avelino Gutierrez guió y alentó sus pasos desde el comienzo de la carrera. Su tio, también médico de prestigio, ejerció influencia en el derrotero científico del nuevo médico. Su espiritu investigador indujo al Dr. Gutierrez a visitar nuevos ambientes científicos y viajó por Esapaña, Francia, Inglaterra, Brasil y Chile, dejando en todos estos países una huella de admiración y respeto, tanto por sus méritos científicos como por sus dotes personales de alta caballerosidad.

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Noticias y Anuncios

Argentina.—El Dr. Filipe F. Carnanza, F.I.C.S., fué designado interinamente Director del Instituto de Medicina Experimental de la Universidad de Buenos Aires.

Brasil.—El distinguido colega Dr. Alfredo Montiero fué elegido Presidente de la Sociedad de Medicina y Cirugía de Río de Janeiro.

Colombia.—El Dr. César Augusto Pantoja, F.I.C.S., fué designado Director del Instituto Nacional del Radium.

Costa Rica.—El Dr. Rafael Angel Grillo, F.I.C.S., preside actualmente el Congreso Nacional de la República.

Chile.—El Dr. Félix de Amesti, F.I.C.S., ha sido condecorado con la Orden del Aguila Tzteca. Se ha rendido homenaje al Dr. Luis Vargas Salcedo, distinguido maestro y cirujano chileno, colocando su retrato en lugar de honor de la clínica universitaria del Dr. Italo Alessandrini. El Dr. Alberto Rahausen ha sido elegido Presidente de la Sociedad de Cirugía de Chile.

Guatemala.—El Dr. Carlos Martínez Durán fué elegido Rector de la Universidad de San Carlos de Guatemala. Ya ha iniciado su labor.

México.—El Vicepresidente Internacional Dr. Manuel A. Manzanilla, F.I.C.S. (Hon.), el Secretario Nacional Dr. Francisco Fonseca, F.I.C.S. (Hon.), y el Tesorero Nacional Dr. Miguel López Esnaurrízar, F.I.C.S. (Hon.), recibieron recientemente títulos de Profesores Honorarios de la Universidad de San Carlos de Guatemala, Profesores Extraordinarios de la Universidad Mayor de San André de Bolivia, Miembros Honorarios de la Sociedad de Cirugía de La Paz y Miembros Honorarios del Ateneo de Medicina de Bolivia. El Dr. Darío Fernández Fierro, F.I.C.S. (Hon.), Vicepresidente del Capítulo Mexicano del Colegio, recibió el título de Miembro Honorario del Colegio de Médicos y Cirujanos de Costa Rica. El Dr. Raúl A. Chavira, F.I.C.S., ye el Dr. Ricardo Labardini Nava, F.I.C.S., fueron elegidos miembros de la nueva Junta Directiva de la Academia Mexicana de Cirugía. El Dr. Xavier Romo Díez, A.M.I.C.S., presentó oposición para Médico Adscrito del Hospital General de México, habiendo obtenido el primer lugar de cinco concursantes.

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La capsule périadé-nomateuse consiste non seulement de prostate normale mais aussi de nodules adenomateux.

Заключения и свод

Заключения автора о патогенезе аденомы простаты основаны на наблюдениях в курсе изучения большого числа простат больных всех возрастов, в которых была найдена аденомо-дегенерация от самого раннего до последнего стажа. Он заключает, что хотя аденома может начаться в любой части железы, она всегда развивается по направлению мочевого пузыря и мочеиспускательного канала, так как эти области не оказывают сопротивление ее росту. Поэтому аденомы становятся преспрематическими. Периаденомная капсула состоит не только из нормальной простаты, но также из аденомных нодюл.

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Perteneció a un sinnúmero de Instituciones científicas, dentro y fuera de su patria, que honrraron al Dr. Gutierrez con cargos de alto rango. Entre estas Instituciones estan la Academia Nacional de Cirugía, de la que fué presidente, Sociedad Argentina Internacional de Cirugía, Sociedad Italiana de Anestesia, Academia de Medicina de Madrid, Academia de Medicina de Río de Janeiro, Sociedad Médica de Valparaiso y otras muchas.

El Colegio Internacional de Cirujanos, del cual fué miembro el Dr. Gutierrez, une su voz al duelo que siente la clase médica de Hispano-América por la desaparición de tan preclaro hombre de ciencia, cuya muerte constituye péridida irreparable para todos.